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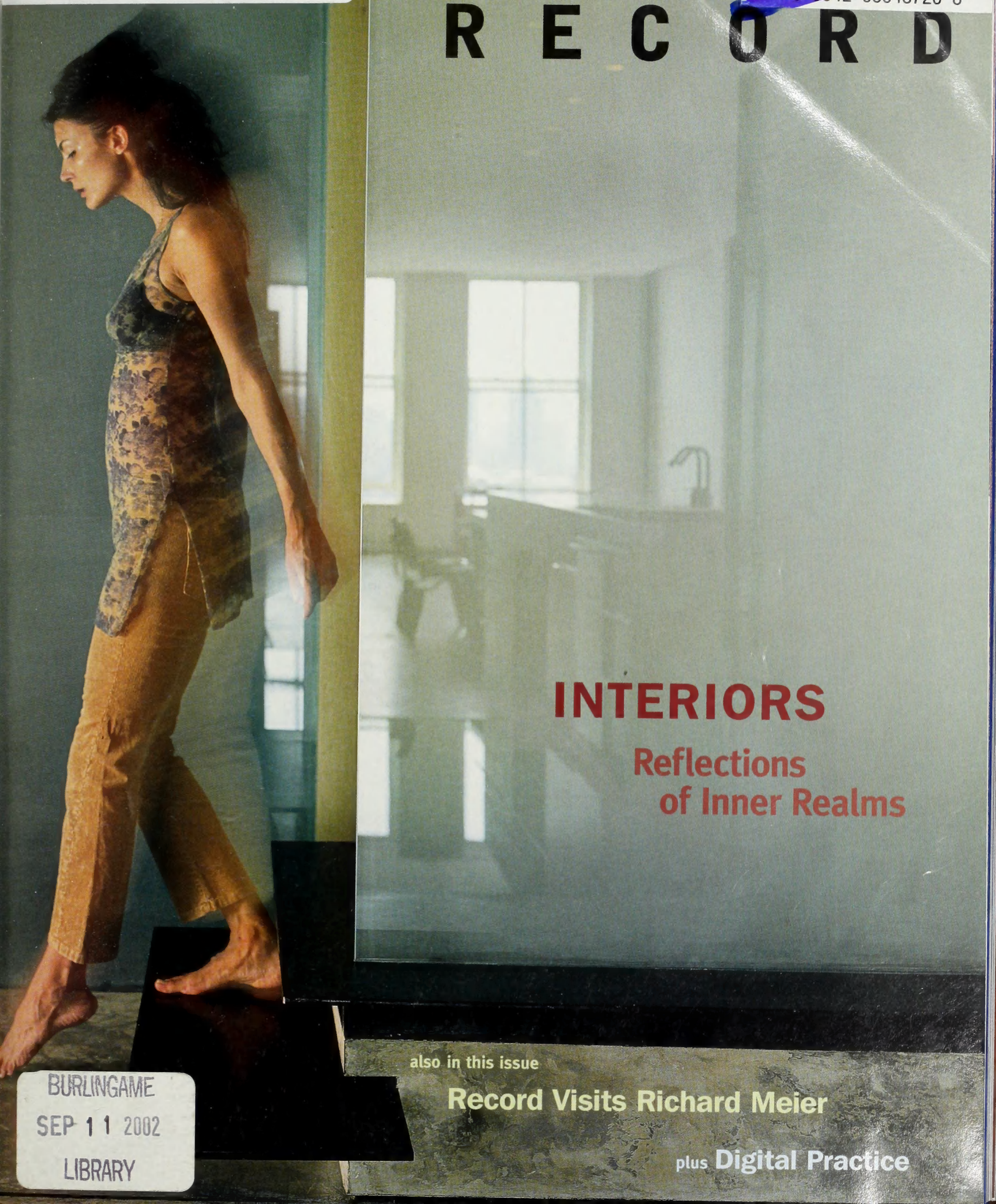

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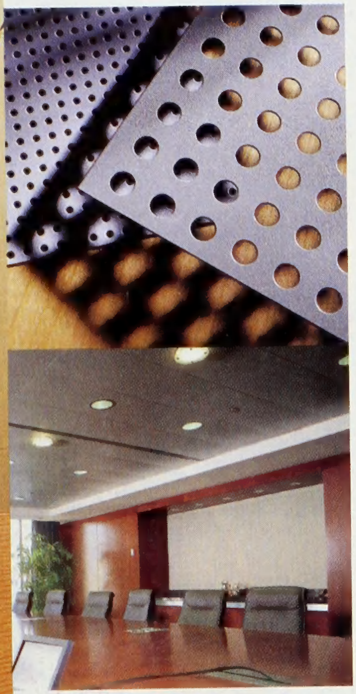

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WEB PRODUCTION	Laurie Meisel, *laurie_meisel@mcgraw-hill.com*
EDITORIAL SUPPORT	Linda Ransey, *linda_ransey@mcgraw-hill.com* Randi Greenberg, *randi_greenberg@mcgraw-hill.com*

EDITOR AT LARGE	James S. Russell, AIA, *james_russell@mcgraw-hill.com*
SPECIAL CORRESPONDENT	Suzanne Stephens, *suzanne_stephens@mcgraw-hill.com*
ILLUSTRATORS	I-Ni Chen, Sophia Murer
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GROUP PUBLISHER	James H. McGraw IV, *jay_mcgraw@mcgraw-hill.com*
VP, ASSOCIATE PUBLISHER	Laura Viscusi, *laura_viscusi@mcgraw-hill.com*
VP, MARKETING AND BUSINESS DEVELOPMENT	David Johnson, *dave_johnson@mcgraw-hill.com*
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MANAGER, RESEARCH	Ellen Halfond, *ellen_halfond@mcgraw-hill.com*
DIRECTOR, CIRCULATION	Maurice Persiani, *maurice_persiani@mcgraw-hill.com* Brian McGann, *brian_mcgann@mcgraw-hill.com*
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DIRECTOR, FINANCE	Ike Chong, *ike_chong@mcgraw-hill.com*
DIRECTOR, SPECIAL PROJECTS	Charles Pinyan, *cpinyan@mcgraw-hill.com*
REPRINTS	Wilda Fabelo, *architectreprints@businessweek.com*

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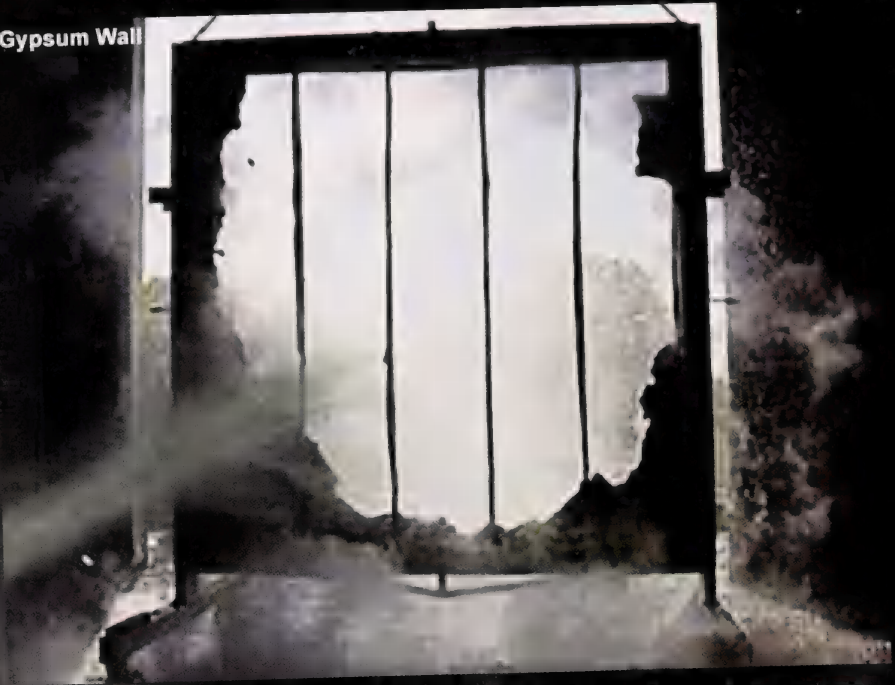

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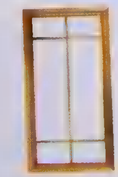

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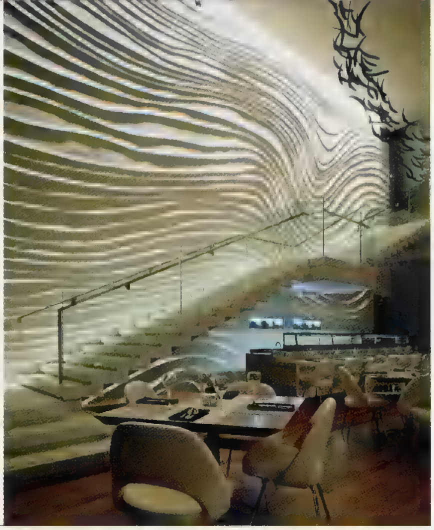

On the Cover: *SoHo Skyline Loft, by Dean/Wolf Architects. Photograph by Jeff Goldberg/ESTO*
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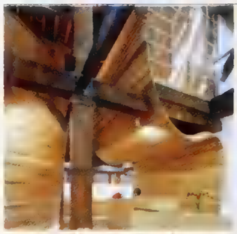
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BTS: Interiors

Come inside! September's **Expanded Building Types Study** section features eight interior projects not seen in the magazine. From New York to California, get project descriptions, plans, specs, photos, and links to people and products involved.

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House of the Month

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Head for the mountains. Visit Studio B's 7th & Main, a multi-family housing unit in Aspen, Colorado, which reflects its neighborhood's Old West mining town character.

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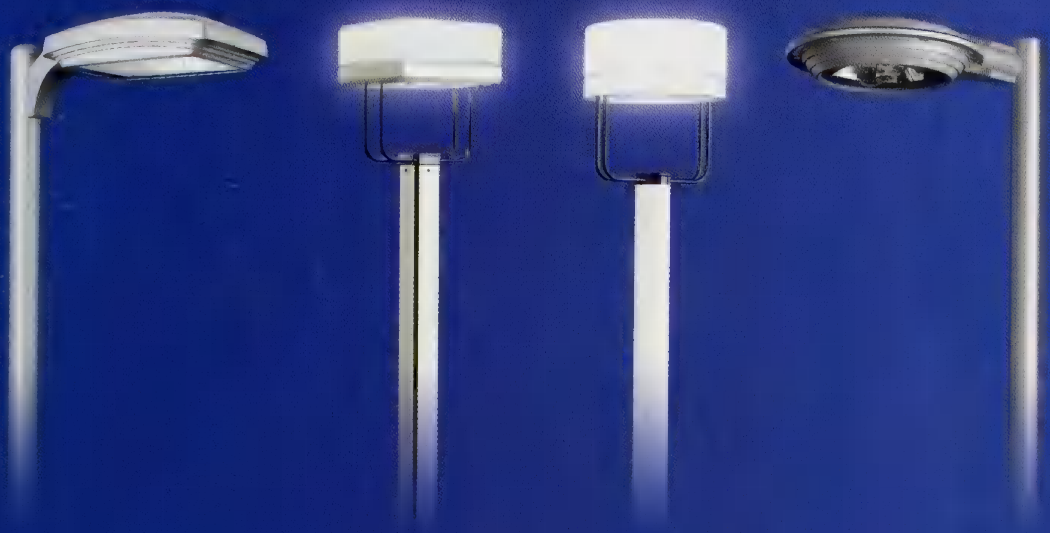

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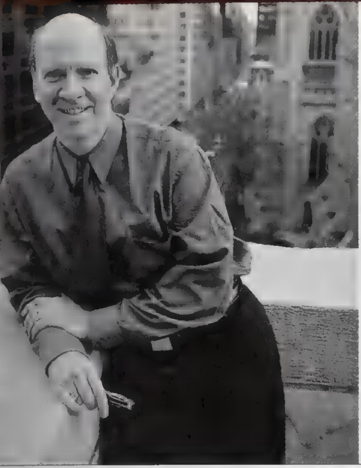

One Year Later

Editorial

By Robert Ivy, FAIA

We may have been wounded, but we're still here. One year after the events of September 11, we have not only survived, we have transcended the blows. While we continue to grieve, the human and material losses at the World Trade Center and the attacks on the Pentagon have unleashed pent-up energies, flooding the world with creative ideas. What, we all wonder, should replace all that went before?

The search for an answer to that question has galvanized universal attention. In an outpouring of responses, private citizens and professional designers are inundating the media with schemes to replace the World Trade Center and alter the future of Lower Manhattan. Television, the magazines (including ARCHITECTURAL RECORD), schools of architecture, lectures and seminars, books, and Web sites are jammed with schemes, from studious to half-cracked. In the aftermath, it seems that everyone has become a designer.

As the suggestions flow in and the cast of characters changes, a singular event may enrich the discussions. On September 8, the Venice Biennale opens its doors to the public with a grand architectural show. It may seem ironic to tout a celebration of design simultaneously with the anniversary of 9/11, yet, in a sense, what better way to proceed? The fact remains, despite a year of economic and political uncertainties, war and rumors of war, we are poised to build again with innovation and hope.

This, only the eighth Biennale International Architecture Exhibition, promises to offer a comprehensive overview, focusing on the "physical and material, rather than the virtual," states director Deyan Sudjic. While large group shows can be overwhelming or superficial, Sudjic has assembled an all-star, heterogeneous cast of 130 architects together in a single exhibition entitled Next. In one visit, the interested viewer can see the work of the great, such as Alvaro Siza, and the lesser-known, like Thai architect Kanika R'kul, in actual projects for real clients. What better way to grasp the temper of the moment?

Next is organized around project types, such as housing; for example, the low-income housing project called the Great Wall in which China has engaged talented architects like the Japanese Shigeru Ban. His ideas are strong and innovative. By contrast, tall buildings continue to be built worldwide, and the examples assembled in Venice will place the issue of scale squarely in public debate. Museums, arguably the laboratory for creativity during the recent past, will be represented by the work of Daniel Libeskind, Tadao Ando, and Sejima/Nishiwara—all with real examples that should broaden our global understanding.

The Biennale is larger, however, than the group show. In addition, approximately 50 countries are exhibiting projects at individual pavilions—a veritable world's fair of architecture spread among the trees of Venice's Giardini di Castello. What is happening in Argentina, Austria, France, or Brazil? Each country includes from one to 20 architects.

The exhibition at the U.S. Pavilion, The World Trade Center: Past, Present, Future, will approach Ground Zero in an uncommon way. Sponsored for the first time by the Department of State, with participation by the Peggy Guggenheim Collection, the pavilion (with yours truly as commissioner) will offer international visitors an encounter with events that, until now, may have seemed surreal or remote. Joel Meyerowitz's photographs of Ground Zero will be complemented by the Max Protetch show of designs for the World Trade Center site—a touring exhibition of 60 schemes that has provoked passionate responses and prompted strong debate about the future of Lower Manhattan.

New ideas. Real projects. Worldwide scope. Debate. The Biennale should add up to a worthwhile pilgrimage for architects, immersing us in the rich, ongoing potential of our professional work. Despite last year's horrors, the world did not stop spinning; instead, one year later, we have reclaimed our footing, and we are making new plans. Come to Venice and find out how. Ciao.

Robert Ivy

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monterey

Letters

Warped choices?

That we live in an *Alice in Wonderland* world is aptly demonstrated by Michael Sorkin's Critique in the July issue [page 61]. Here, concepts and principles of urban construction are applied to actions of urban destruction. Moreover, the use of the term *urbanism* in a pejorative sense cruelly twists its meaning in an attempt to achieve political correctness.

The intifada is a war being waged by Palestinians upon Israel. Elements of this war consist of sneak attacks upon the Israeli population and cities delivered by placing human bombs in public places. This tactic is not only immoral in its indiscriminate killing of noncombatants, but, further, serves to alter a people's sense of community by rendering the building blocks of community—cafés, markets, public squares, and public transport—potential killing zones. I agree with Mr. Sorkin that this antiurban act reduces the quality of the urban living experience. After all, who would want to go anywhere or meet with others if one fears for one's life?

However, to equate this aggressive act of destroying the urban experience through fear with the bulldozing of buildings in the Jenin Camp stretches the concept of metaphor to the breaking point. The bombings are an attack tactic upon a people; the bulldozing was a reaction to seek out the perpetrators of the bombings.

Further, to equate the bulldozing with the implementation of Haussmann's plan for Paris smacks of the ridiculous. Indeed, to equate war tactics with urban planning tactics shows how far one can warp logic. Mr. Sorkin asks us to look at plans that create broad straight avenues only as tools for the military control of the populace. In like manner, then, we should look at the street patterns of the camp only as they are comparable to the military purposes of the similarly narrow and confused medieval street patterns, which, many hold, were designed to confound invaders of the community. It is clear that Mr. Sorkin is only telling part of the story in order to make the model suit his argument. This is an intellectually corrupt approach.

The Israeli-Palestinian situation has been politicized enough without the help of architects and planners, thank you. The intent of our training is to make us builders, not destroyers. To choose to interpret what are essentially war tactics as a misapplication—indeed, as a conspiratorial application—of urban-planning principles is to further sensationalize the issue. Perhaps Mr. Sorkin should spend more time working to perfect an architecture of quality and less time trying to explain acts of war and aggression in terms of the tools of urban design.

—Leslie S. Pollock
Chicago

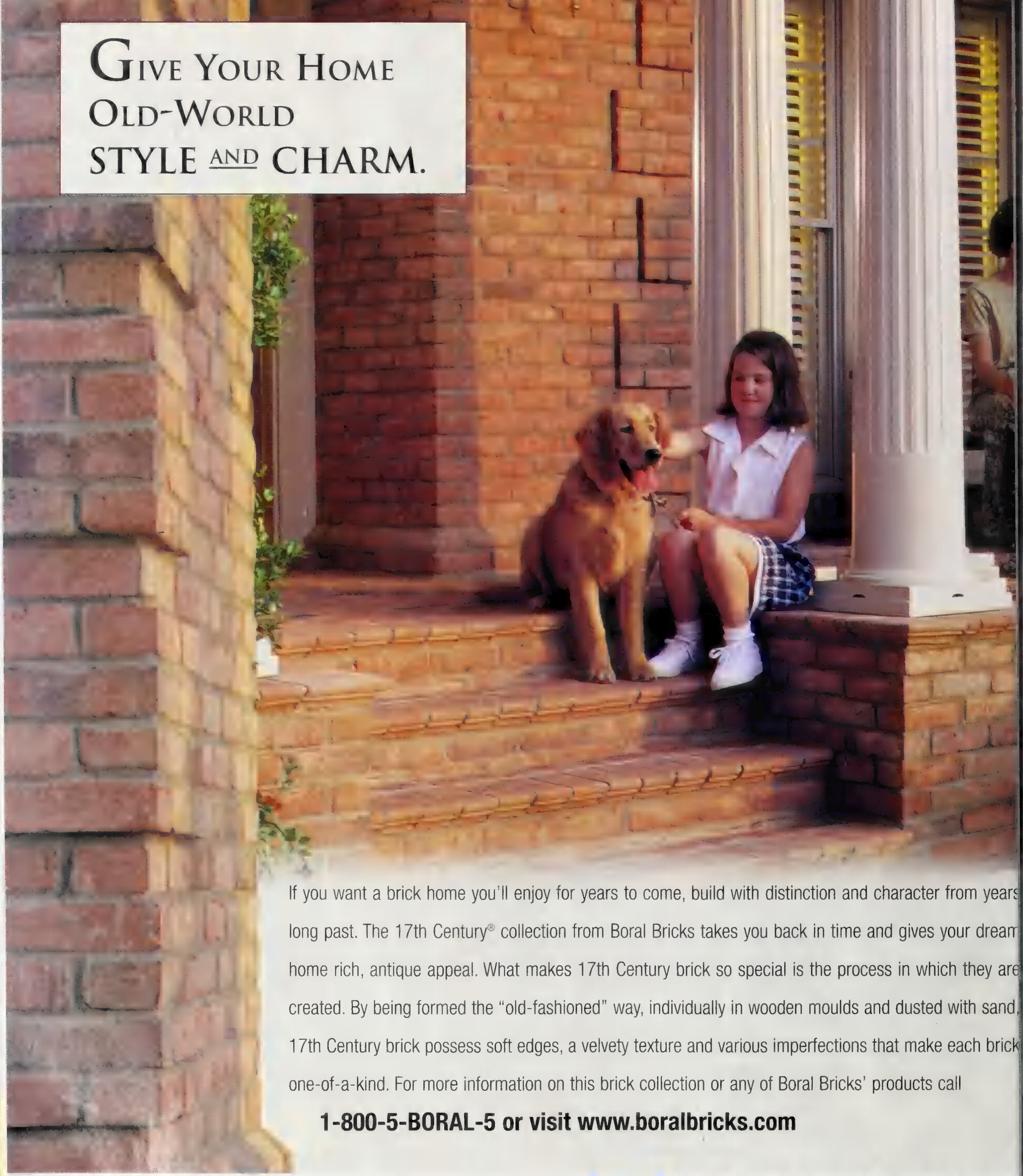
Contributing editor Michael Sorkin responds: A number of letters have been written to RECORD*—including two published last month—accusing me of taking an "anti-Israeli" position in a recent article. In both content and tone, these letters remind me of the kind of criticism I remember from the Vietnam era in which it was so often suggested that dissenters were "anti-American." As someone who is strongly "pro-Israel," I join many Israelis who feel that the continued occupation of the West Bank and Gaza corrupts Israel's soul and subverts its democracy. As in the invidious attempt to silence opposition during Vietnam by so-called "patriots," the knee-jerk style of letter writers who can't look beyond calculations of equivalence (our killings are justified by their killings, our hatred is the product of their hatred, etc.) is a moral dead end and prevents both sides from recognizing the tragic circumstances of the other. That architecture plays a role in this is depressing for those of us who wish to see both Israel and Palestine built rather than destroyed.*

But the misuse of our tools is hardly fresh news: Urbanism and its techniques have carried a political and military valence from their beginnings. Whether in the fortifications that dominated city planning for thousands of years, the boulevards of Haussmann, the forced de-urbanization imposed by the Khmer Rouge, the patterns of physical segregation still so visible in America, or the environmental disaster of sprawl, urbanism—always the reflection of large-scale social arrangements—cannot be disengaged from its wider ramifications. Because I am someone who has dedicated his life to producing an urbanism of "quality," I understand the absurdity of trying to strip the city of the density of meanings it invariably expresses, just as I understand that there are—and must be—many versions of the good city. The wretched failure of negotiations for peace in the Middle East springs precisely from the inability of either side to understand and empathize with the real effects of their actions: To the Israeli child killed by a suicide bomber and the Palestinian child killed in an air strike, the moral differences being argued are surely unimpressive. Insisting that Israeli or Palestinian violence is simply a response to that of the other, or, for that matter, that urban values can be separated from ethical ones, is truly to slide down the rabbit hole of futility and violence.

La isla bonita

I read the July Correspondent's File [page 55] by James S. Russell, AIA, with interest, but I also found some parts of it unsettling. Being of Puerto Rican descent and familiar with Puerto Rican history and architecture, I am prompted to make several comments. I found redundant negative inferences about Puerto Rico and, in some cases, visionless interpretations. I did, however, find great delight in reading about the Condado and ongoing efforts to save historic buildings/hotels.

Puerto Rico possesses extensive history and an assortment of architectural styles concentrated in its 3,515-square-mile-island reach. Such a concentration cannot be found throughout other lands. A fine example of one architectural style is San Juan Cathedral, built in the 1520s. The Cathedral is an authentic and rare New World example of medieval architecture. Also, the second-oldest church in the Western Hemisphere is located in Puerto Rico; it is an example of 16th-century Spanish Gothic architecture. Spanish forts on the island date back to the early 1500s. San Juan is the oldest city under the U.S. flag, a 465-year-old neighborhood. Unequivocally, preservation is of the highest importance, hence Modern architecture needs to shake hands with historic. Should Puerto Rico mirror Miami, Havana, or any other city? I think not. Puerto Rico has a distinguished historic recognition of its own. Puerto Rico is a worldwide attraction for architecture enthusiasts and professionals. The article's title, "Will a New Wave of Tropical Modernism Restore San Juan's Luster?" implies that San Juan lost its richness, allure, and attraction. It never did and likely never will. The challenge is present for architects/developers to come up with interesting projects that would enhance the city of Old San



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Letters

Juan without eroding its historic significance.

—Daisy Vázquez
Project Manager, Finance and Operations, Plant Operations
University of Houston

Drawing our future

I have noticed that on different occasions, RECORD has touched on the topic of drawing as a must-know ability for the young generation of architects. I am thankful that the years of my early architectural studies were on the cusp of where the hand started to be replaced by the mouse in a noticeable manner. My instructors always encouraged us to draw, even forcing us to forget the word "write." We were to draw letters, not to write words.

Cad programs and 3D graphics have undoubtedly revolutionized the way we produce drawings and develop projects, but they are not a replacement for creativity or a key for it. Creation comes from the pure spirit and mind of the designer, and it is translated onto paper by his or her hand. Creating in front of a monitor limits design to the commands of a given program. Those who know how to draw, sketch, and render their ideas are the ones who are able to gain a better understanding of the spaces they design and their relationship to a whole building, its site, and even its cultural and social contexts. The architect or designer who understands this is capable of transmitting all of this sensibility to Cad drawings or 3D renderings.

It isn't hard to recognize the buildings that have not experienced any of this process. Unfortunately, this situation can be traced back to architecture schools around the world where even students at the graduate level are incapable of drawing readable floor plans or rough sketches to express architectural features. I found it shameful that instructors at that level are forced to spend time teaching basic techniques of drawing to students. The responsibility of learning to draw and sketch can't be left to undergraduate design instructors; it must be a course of its own during the first years of formation.

—Gustavo Carmona
Architect/graduate student
Tempe, Ariz.

The call for a competition

The schemes presented last week for the redevelopment of the World Trade Center site demonstrate two separate endeavors. First, commerce: planning for the technocratic and commercial uses of the site; and second, emotion: memorializing the loss of life at Ground Zero. Separating our collective response to the tragedy into these two objectives, however, eliminates the possibility that the architecture of reconstruction will be able to express the symbolic power of the event and the public consciousness surrounding it. If we proceed along our current path, we will be left with an isolated monument at the foot of a more or less unremarkable commercial development.

This quandary is the inevitable result of a constrained and narrowly defined set of planning parameters, interpreted by architects and planners chosen for their demonstrated acceptance of commercial priorities. The clients—the Port Authority and the Lower Manhattan Development Corporation—have shown clear interest and motivation, but they are unaccustomed to confronting problems that require such a powerful and visionary solution.

Public reaction to the banal consequences of the current redevelopment process indicates that alternative visions must be imagined. Even in light of the unfortunate uniformity of commercial and retail uses concentrated in the program, the process has fallen short.

The situation at hand calls for a competitive process wherein the most creative and talented architects, planners, and engineers can explore a wide range of solutions. The context of a competition will encourage risk-taking and will exponentially broaden the range of potential resolutions. A jury comprised of representatives from the Port Authority and the LMDC—as well as from the public, political, and professional ranks—would represent the full range of interests dedicated to this task.

This is the time to be bold. Reconstruction of the damage done at Ground Zero must invoke the promise, identity, and resolve of a nation that only grows stronger when it is threatened. An inclusive, democratic forum to investigate a representative set of talents and ideas is the best way to achieve a powerful architectural statement in Lower Manhattan that is both functional and symbolically evocative.

—James Garrison, AIA
New York City

Corrections

In the July Correspondent's file on Puerto Rico [page 55], design credit for the Museo de Arte de Puerto Rico should have read Otto Reyes Casanova, Luis Guttiérrez, and RKK+G. In the July Critique column, by Michael Sorkin [page 61], in the author bio, credit should have gone to Sharon Zukin, who was a coeditor of the book cited, *After the World Trade Center: Rethinking New York City*, which was published in May 2002 by Routledge.

E-mail letters to Robert Ivy at rivy@mcgraw-hill.com.

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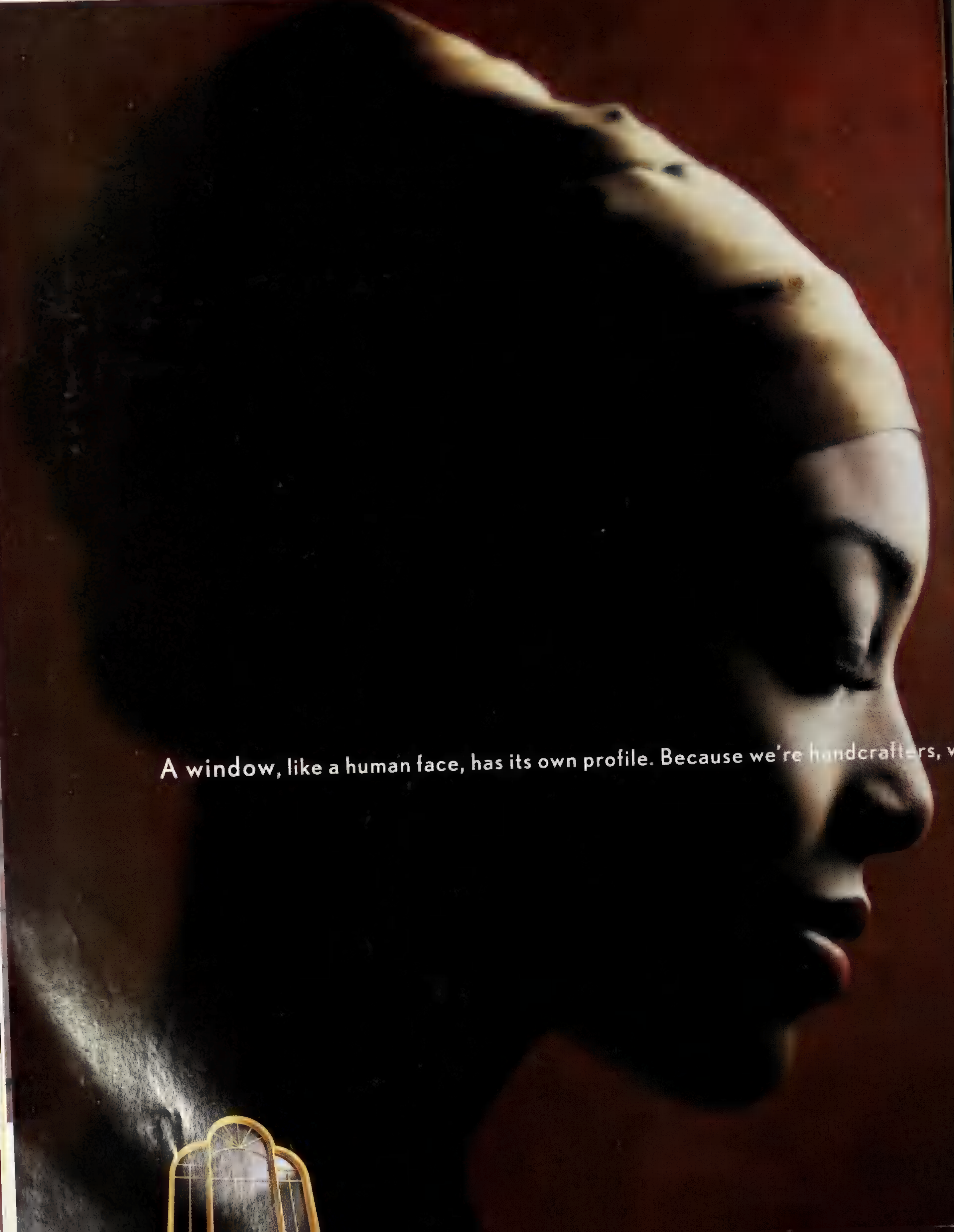
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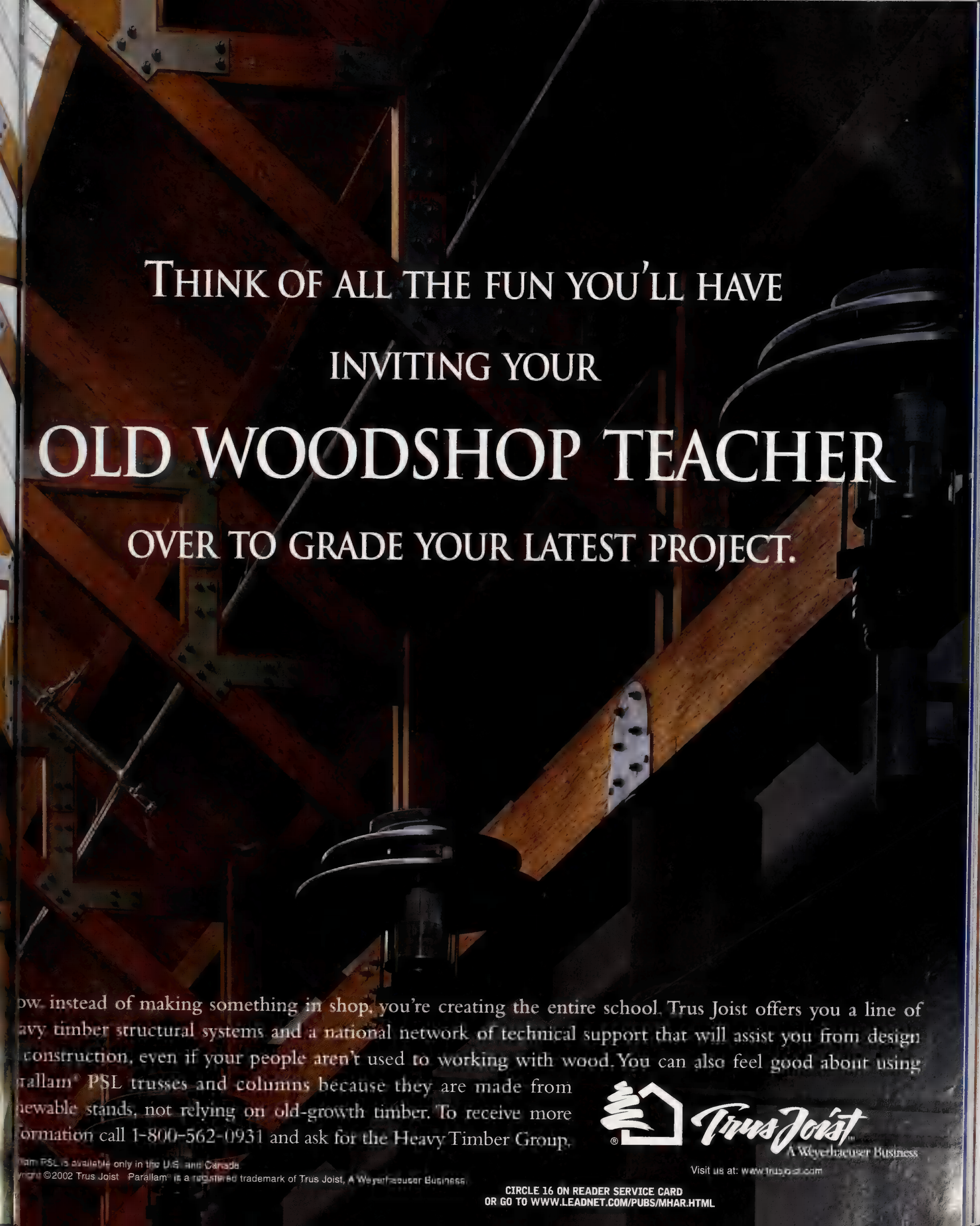

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Record News

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Design modified for SOM's Trump Tower Chicago

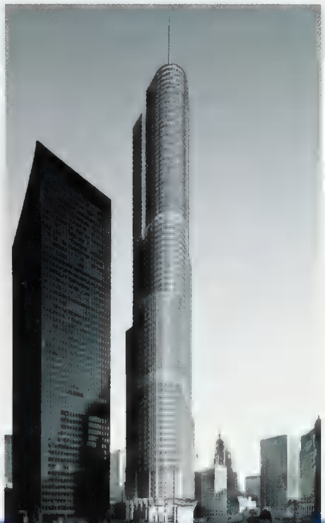
A significantly modified design for what will be Trump Tower Chicago was unveiled by the Chicago office of Skidmore, Owings & Merrill (SOM) this summer. Adrian Smith, FAIA, is leading the design team for what is now planned to be an 86-story office and residential skyscraper where the *Chicago Sun-Times* headquarters currently stands at Wabash, by the Chicago River. Smith's latest design is eight stories taller, less bulky, more rounded, and more responsive to its context than the initial design unveiled in late 2001 [ARCHITECTURAL RECORD, January 2002, page 32]. At press time, the design was pending Chicago City Council approval.

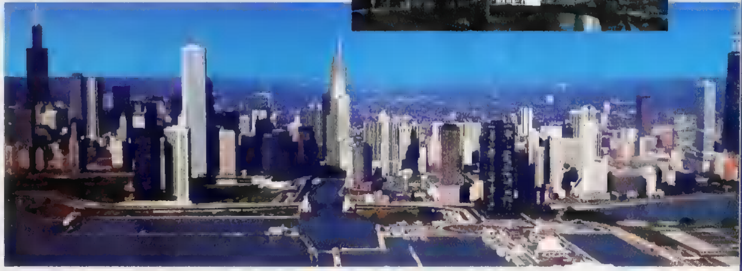
The 1,125-foot-tall building will be the fourth-tallest in Chicago. It will have a broadcast antenna, which technically will not count in the official building height. With the antenna, though, the skyscraper will be 1,300 feet tall and the second-tallest building in Chicago, and in the U.S., behind the city's 1,450-foot Sears Tower.

To build the skyscraper, New York developer Donald Trump is partnering with *Sun-Times* publisher Hollinger International. The 2.1 million-square-foot building will include a ground-level lobby, parking on floors two to seven, a health club on floors eight to 10, offices on 11 to 50, luxury condominiums on 52 to 84. The remaining floors will be mechanical space. The building, which Trump hopes to complete by 2006, will face a 30,000-square-foot riverfront plaza and river walk that will extend to Michigan Avenue.

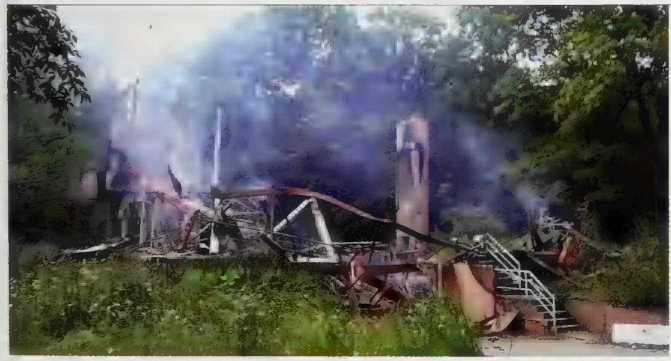
Smith's enhanced design responds to its architecturally rich context along the north side of the river, including the Wrigley Building and Tribune Tower of the 1920s, the 1960s Marina City "corncob" towers, and the IBM Building, by Mies van der Rohe, immediately across the street. The previous design, stepped like a wedding cake, would have awkwardly competed with neighboring buildings.

Trump, who has never built in Chicago before, had hinted in 2001 that this building was being planned as the world's tallest. Plans were scaled back after September 11. *John E. Czarnecki, Assoc. AIA*





Trump's building (right, next to Mies's IBM Building) will be the fourth-tallest in Chicago (center, below).



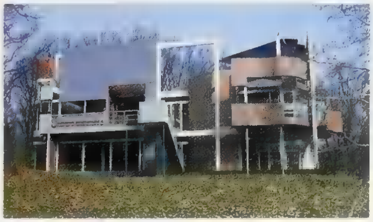
Michael Graves's Snyderman House, neglected in recent years, burns down

The 1972 Snyderman House in Fort Wayne, Indiana, a seminal early project of Michael Graves, burned to the ground on July 30 (above). The house was perhaps the best example of the Modernist work of Graves's early career. Arson is suspected but was not confirmed at press time.

The home's original owners, Sanford and Joy Snyderman, left the house in 1998 and sold it in December 1999 to developers Joseph Sullivan and William Swift, who initially had plans to tear it down and develop a number of homes on the property. Local architect Matt Kelty, AIA, a partner in Kelty Taylor Design, started a nonprofit organization called Eleventh Commission Inc. (the house was Graves's 11th commission) to attempt to purchase the house and save it [RECORD, October 2000, page 38]. The building had remained on the site in disrepair since 1998, and vandals "tagged" it, knocked holes in interior walls, and broke glass.

The house was the subject of much attention in the past four years. Kelty, crushed to see it destroyed, told RECORD, "More than 3,000 attended the two open houses sponsored by Eleventh Commission Inc., and at least two dozen student groups were provided private tours. Photographers of international fame visited to capture the deteriorating design on film, and members of academia who happened through the Midwest would visit the house." *J.E.C.*

The Snyderman House was a seminal Modern project in Graves's early career.



OFF THE RECORD

The Chicago Plan Commission has approved a design by Atlanta-based Thompson, Ventulett, Stainback & Associates for an $800 million, 800,000-square-foot addition to Chicago's McCormick Place, increasing the convention center's exhibition space to 2.8 million square feet.

Susan Henshaw Jones, president of the National Building Museum in Washington, D.C., since 1994, will leave the museum in January. She is planning to return to New York.

The National Building Museum has launched its first online exhibition, *Building America*, at www.nbm.org.

Applications for the 2003 Rome Prize are due November 1. Visit www.aarome.org to learn more.

Arquitectonica has been commissioned for an 80,000-square-foot printing facility for the *Sarasota Herald Tribune*, owned by The New York Times Company. The building will be completed in late 2004.

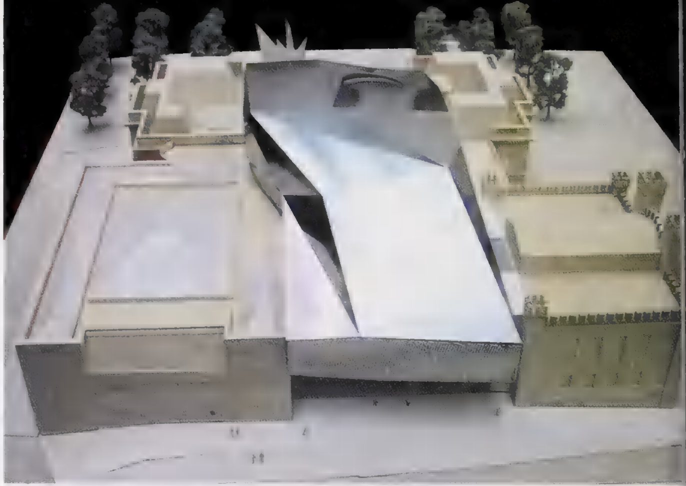
The Commission of Fine Arts in Washington, D.C., elected Harry G. Robinson III, FAIA, as chair of the commission, succeeding J. Carter Brown, who died in June.

The four firms on the shortlist for the renovation of Two Columbus Circle by Edward Durell Stone, for a new home for the American Craft Museum, are Smith-Miller + Hawkinson Architects, Zaha Hadid, Toshiko Mori, and Allied Works Architecture.

C. Robert Campbell, AIA, of Albuquerque, has been elected 2002–2003 president of the National Council of Architectural Registration Boards.

Ann Beha Architects of Boston has designed a $21 million expansion for the Delaware Art Museum in Wilmington, to open in spring 2004.

UN Studio brings clarity to Atheneum



UN Studio's addition to the Wadsworth Atheneum Museum will extend into what is now a central courtyard (above) with dramatic interior spaces (below).

The Wadsworth Atheneum Museum of Art, in Hartford, unveiled a schematic design by Ben van Berkel and Caroline Bos of Amsterdam's UN Studio, with Fox & Fowle Architects of New York serving as executive architect. The plan is intended to unite four of the museum's five buildings, which were built between 1842 and 1969. The Wadsworth Atheneum is the oldest art museum in the United States.

The various buildings that make up the museum's current campus were designed in varying styles, from the Gothic Revival Wadsworth building, the oldest, to the 1934 Avery Memorial building, the first International Style museum building in the U.S. The various floor plates of these buildings do not align, and the museum is notoriously hard for visitors to navigate. The current museum configuration only allows for about 2 percent of the collection to be shown at any one time, and parts of the permanent collection must be taken down to install traveling exhibitions.

The design proposed by UN Studio would raze the 1969 addition to the museum, which has been problematic for curators, and replace that structure with a new main entrance based on the idea of a public square. The new building would extend into what is now a central courtyard, where a "double helix" of spiraling ramps would connect the varying floor levels of the existing pavilions. The ramps would circle around a central cylindrical skylight that would bring natural light into the interior of the building. Upper floors of the new building would provide a 6,300-square-foot gallery for contemporary art and an 8,400-square-foot temporary exhibition gallery. The schematic design model showed the exterior of the building clad in a perforated metal skin, though the final materials have not been specified.

The museum has begun a fund-raising campaign and has set a goal of raising $80 million to cover construction costs. Ground breaking is scheduled for early 2004, with a construction period of 24 to 30 months, during which time the museum will be closed.
Kevin Lerner

AIA realigns national office leadership with three team vice presidents

AIA leadership includes (from left) Barbara Sido, Norman Koonce, FAIA, Charles Hamlin, James Dinegar, and Helene Dreiling, FAIA.

A realignment of top leadership at the national office of the American Institute of Architects (AIA) was approved in August. The national office is now organized under three teams directed by team vice presidents who will report to James Dinegar, the AIA's chief operating officer. The team vice presidents are Barbara Sido, CAE, Team V.P., Knowledge; Charles Hamlin, Team V.P., Communications; and Helene Combs Dreiling, FAIA, Team V.P., Relationships. Sido, formerly the AIA's managing director of AIA professional practice, will direct continuing education, professional practice, and knowledge resources. Hamlin, formerly the AIA's managing director of communications, will direct external and member communications, marketing and promotional activities, as well as conventions and meetings. Dreiling, formerly the AIA's managing director of stakeholder relations, will direct component affairs, government affairs, membership services, and alliances.

In a statement, Norman L. Koonce, FAIA, E.V.P. and C.E.O. of the AIA, said, "This realignment will result in a more innovative, focused, and effective AIA working on behalf of our members' success." *J.E.C.*

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SPECIAL REPORT

Opening WTC planning process adds more questions to mix; memorial design competition to come in 2003

The process of planning to rebuild at the site of the World Trade Center (WTC) became murkier and more confusing this past month. After the six concept plans presented in July were roundly criticized [RECORD, August 2002, page 23], the Lower Manhattan Development Corporation (LMDC) opened up the process with a call for architects, planners, and landscape architects worldwide to submit credentials to potentially "study" the site.

A request for qualifications, released on August 19, is available on the LMDC Web site, www.RenewNYC.com. The deadline for response to the RFQ is September 16. To many in the design community in New York, this appears to be an open competition, but in fact it's not. The RFQ, in bold type, states, "This is NOT a design competition and will not result in the selection of a final plan. It is intended to generate creative and varied concepts to help plan the future of the site."

New York New Visions, a coalition of 21 architecture, engineering, planning, landscape architecture, and design organizations, will advise LMDC in selecting up to five teams by September 30 to prepare concept plans for the next phase of the planning process. According to a release from the LMDC: "The LMDC will work with New York New Visions to appoint a team of outside advisers who will narrow the field of potentially thousands of respondents to between 10 and 20. An LMDC committee will then make the final selection of teams." The five teams must produce final presentation drawings by November 22.

The five teams will "be guided by new, flexible program alternatives developed in conjunction with the Port Authority of New York and New Jersey," according to the LMDC release. Those program alternatives were not made public at press time. Many question why flexible program alternatives were not developed before Beyer Blinder Belle (BBB) was brought on board to develop concept plans in the first place.

At the same time as five new teams are introduced, BBB and Peterson/Littenberg Architecture & Urban Design continue their own work. The LMDC release says: "[BBB] and Peterson/Littenberg will continue to explore varied approaches to the World Trade Center site based on the new program alternatives. All work will be ready for public review by the end of the calendar year, completing the second phase in the three-phase planning process."

BBB released an August 14 statement of support for opening the process to attract the world's top designers. The statement ends, however, with BBB defending its work thus far: "During its first six weeks on this project, [BBB] developed more than a dozen schemes for the WTC site, many of which went beyond the initial program restraints. We regret that our most creative work from this period was not presented for public view."

Peterson/Littenberg, which has been in-house consultants to the LMDC for six months, had its contract extended for three more months.

The LMDC also announced in August that an international design competition specifically for a memorial on the WTC site will begin early next year. A call for submissions will go out in early 2003, and the winning design will likely be chosen by September 11, 2003.

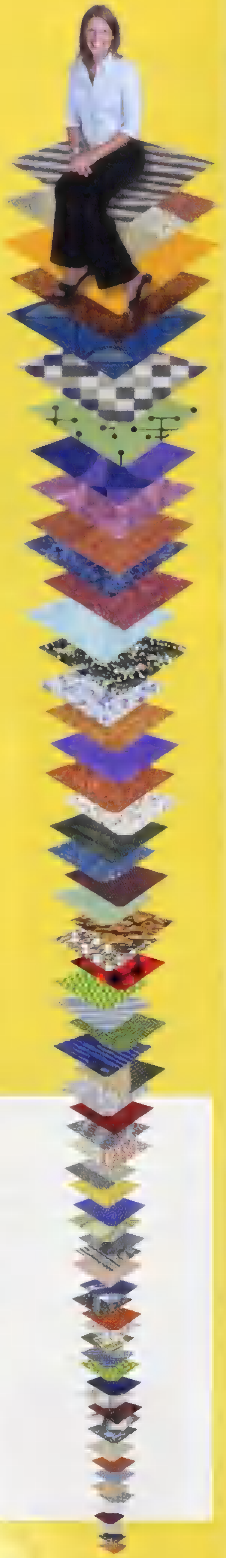
John E. Czarnecki, Assoc. AIA

Clarifying WTC plan designers

In the six concept plans for the World Trade Center site [RECORD, August 2002, page 23], the Memorial Plaza plan was based on a Cooper Robertson & Partners design with significant modifications by Beyer Blinder Belle (BBB).

Regarding the Memorial Garden plan, Louis Tomson, president of the Lower Manhattan Development Corporation, and BBB partner Jack Beyer, FAIA, both noted at a July 16 press conference that Skidmore, Owings & Merrill (SOM) had significant input on the plan. However, SOM chair Marilyn Jordan Taylor, FAIA, told RECORD the plan was "created, prepared, and presented by Beyer Blinder Belle. SOM is not the author or originator of the plan." ***J.E.C.***

WWW For continuous updates on the planning of Lower Manhattan, see our Special section at www.architecturalrecord.com



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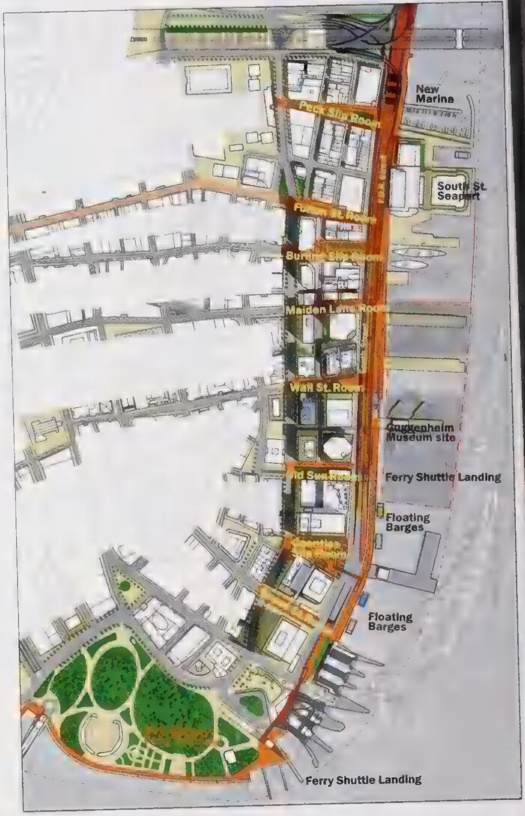
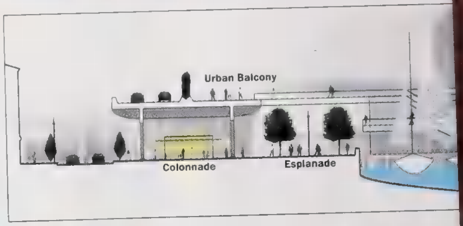
Unique public spaces for East River side of Lower Manhattan



While the World Trade Center site is receiving great attention in Lower Manhattan, the Alliance for Downtown New York and Community Board 1 are releasing a plan this month focusing on the area just a few blocks east—the East River shore of Lower Manhattan.

Skidmore, Owings & Merrill, led by Marilyn Jordan Taylor, FAIA, in collaboration with urban designer Ken Greenberg of Greenberg Consultants, Toronto, and Arup as transportation consultants, conducted the study of Lower Manhattan along the East River from the Brooklyn Bridge to Battery Park. The plan's recommendations add up to 35 acres of new open space in a variety of forms to activate the waterfront. The plan anticipates that the Guggenheim may build a Frank Gehry–designed museum on the riverfront.

Lower Manhattan "is the northern prow of an absolutely wonderful water resource—New York Harbor—which is the reason that the city is here," Taylor says. To take advantage of this, the plan includes an esplanade along the East River, as well as a number of floating barges and possible ferry shuttle landings. The planners hope to encourage more connections between Lower Manhattan and the Brooklyn side of the East River.



The most radical aspect of the plan may be the recommendation to convert what are now the northbound lanes of the elevated FDR Drive south of the Brooklyn Bridge into a pedestrian promenade (see section drawing) while keeping two lanes of automobile traffic on what are now the southbound lanes. "There are really stunning vantage points [on the FDR] that you simply don't get on the ground," Greenberg says.

The planners considered taking FDR Drive down to grade, but "that's too big a move, we think, and too out of the question," Taylor says.

East-west streets would be enhanced as distinct "public rooms," and the FDR Drive underbelly would be beautified to create a public colonnade. "It's counterintuitive," Greenberg says. "I've come to appreciate the quality of space under the FDR." *J.E.C.*

What is now parking space under FDR Drive (above right) could become a colonnade with kiosks, proper lighting, and a walkway (below right).

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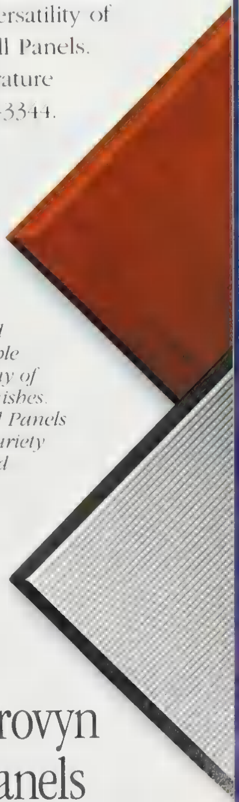

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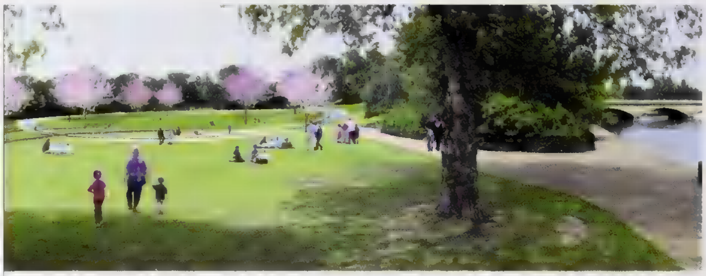

An oval of water to touch and walk through, the memorial will be interactive.

With a necklace of water, Kathryn Gustafson wins competition for Princess Diana memorial

Seattle-based landscape architect Kathryn Gustafson, with her London-based partner Neil Porter, have won a competition to design the Princess Diana Memorial Fountain in London. The $4.7 million scheme calls for a constantly flowing circular ring of water on a 1-acre planted area in London's Hyde Park near the Serpentine.

The competition attracted 58 submissions from architects and designers such as Sir Terry Farrell and Zaha Hadid, among others. The Memorial Fountain Committee narrowed the pool of entries to the Gustafson Porter design and a scheme by London's Future Systems, with Anish Kapoor, whose plan called for a pyramid of colored water jets. With a deadlock vote, British culture secretary Tessa Jowell intervened and selected the Gustafson Porter design.

The winning proposal, entitled "Reaching Out—Letting In," is meant to express Diana's open and gracious nature with the public, says Gustafson. It has a 164-foot-wide-by-262-foot-long sloping oval that will "set lightly, like a necklace, across the existing contours of the site."

The channel ring, which ranges from 9 to 18 feet in width, will be lined in smooth-cut white stone and feature running water that alternately shimmers and cascades. From the highest point of the slope, the water will flow in two directions, collecting in a pool at the bottom, where it will be drained, cleaned, and recirculated in a seamless transition. With depths of ¼ inch to 10 inches, visitors will be able to touch the water and walk in it, Gustafson says. Surrounding foliage consists of light-colored trees, flowers, perennials, and low shrubs.

The memorial, scheduled to open in August 2003, the six-year anniversary of Diana's death, received some negative press in Britain for being too minimal and not fountainlike. *Tony Illia*

Biennale exhibiting the future of world architecture

The future of architecture is now on display in Venice, Italy, at the Biennale di Venezia, the international art and architecture exhibition. Curated by Deyan Sudjic, the installation *NEXT: the future of world architecture* features more than 130 projects being planned worldwide of multiple building types by both established and emerging architects, many of which have not been shown before.

The *NEXT* exhibition, showcasing the tactile qualities of form and materials in projects, examines how the designs will be built rather than simply displaying virtual representations of architecture. The projects are organized in the following categories: housing, museums, transportation (communications), education, towers, the workplace, shopping, religious and public buildings (church and state), performance venues, and master plans. The towers category, for example, includes the New York Times tower by Renzo Piano; Hearst headquarters tower in New York and Swiss Re London headquarters, both by Foster & Partners; and the Montevideo tower in Rotterdam, by Mecanoo. The Museum of Modern Art expansion in New York by Yoshio Taniguchi is one of the museums in the show.

An exhibition called *World Trade Center: Yesterday, Today, Tomorrow* [RECORD, June 2002, page 30] will comprise the United States entry in the Biennale, and ARCHITECTURAL RECORD editor in chief Robert Ivy, FAIA, serves as commissioner of the American pavilion.

The Biennale continues through November 3 (www.labiennaledivenezia.net). *J.E.C.*

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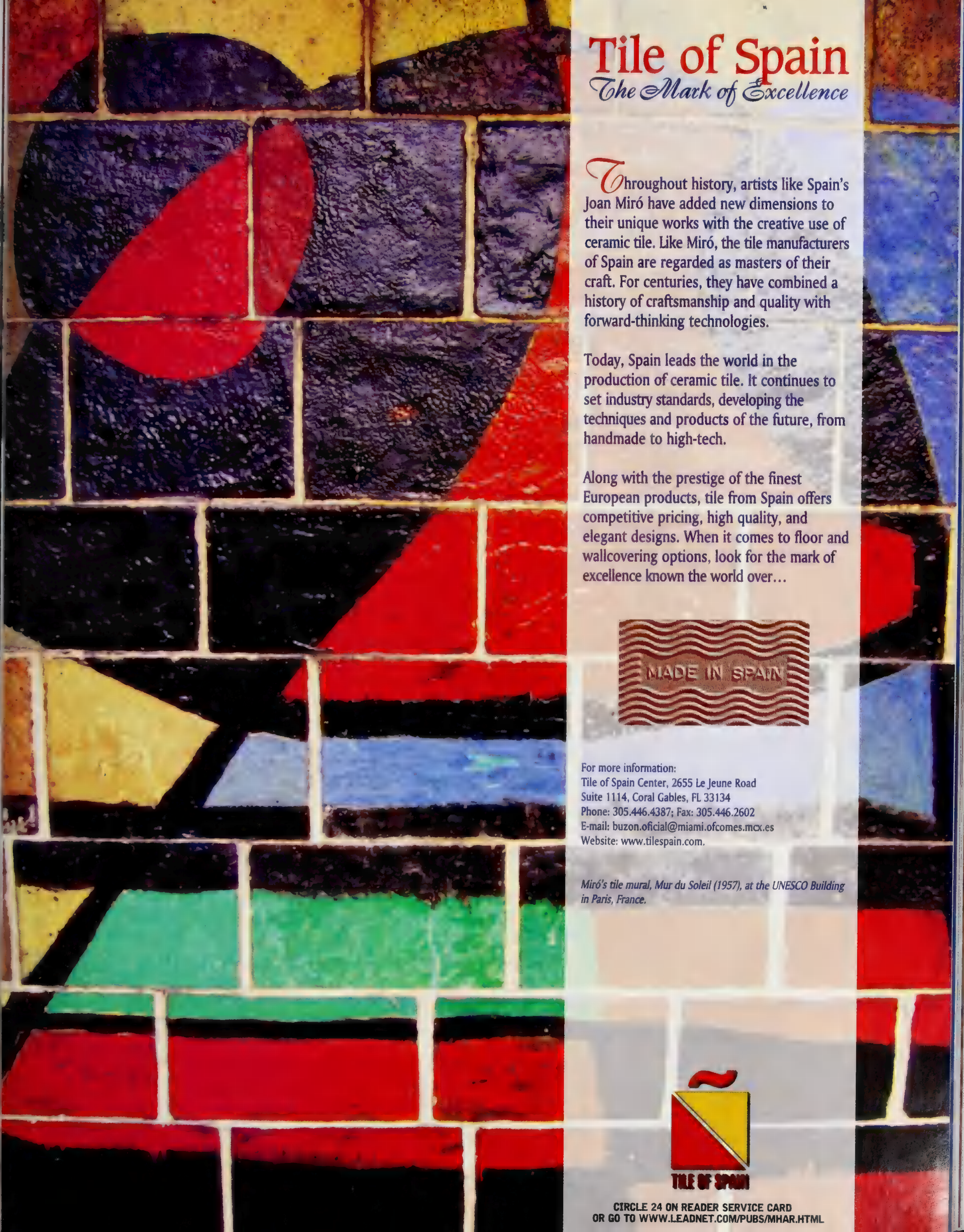

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Miró's tile mural, Mur du Soleil (1957), at the UNESCO Building in Paris, France.

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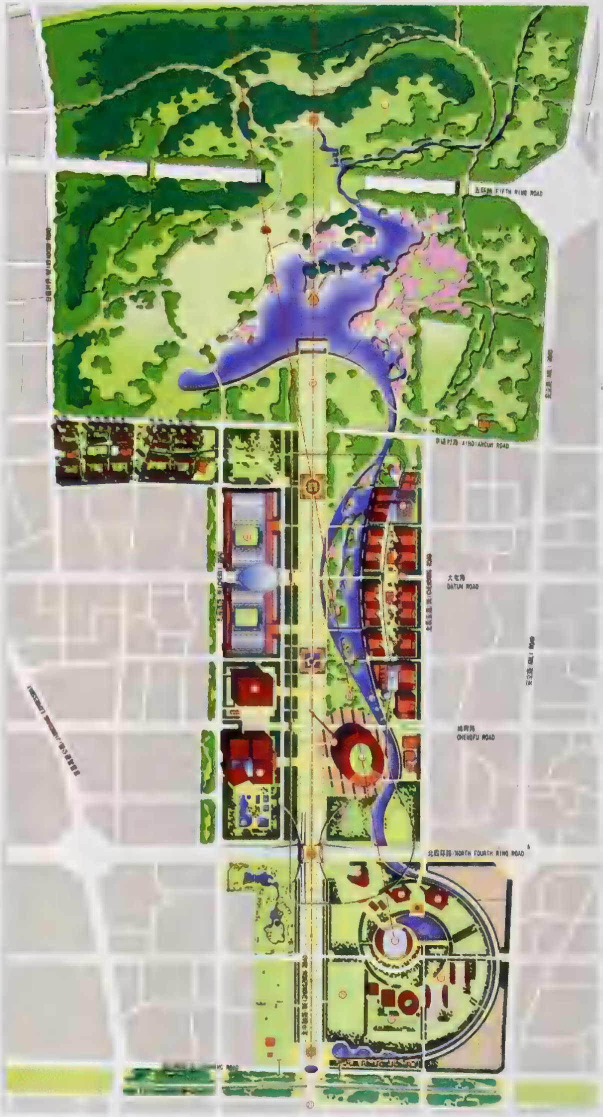
Sasaki takes Beijing competition for 2008 Olympic plan

Beijing has allocated more than $32 billion for infrastructure improvements in preparation for the 2008 Summer Olympics. Architecture, planning, and landscape design firm Sasaki Associates has developed a plan that will serve as a framework for the multiple Beijing construction projects. Sasaki, headquartered in Watertown, Massachusetts, won the $250,000 grand prize in a competition for the design of the main 2008 Summer Olympic site in Beijing.

The conceptual design of the 2,800-acre "Olympic Green"—codeveloped with Chinese firm Tianjin Huahui Architect and Design Company—includes siting of a stadium in which the opening ceremonies will be held, a park, and the athletes' village. The scope of Sasaki's work for the site includes urban design; landscape architecture; and transportation, traffic, and utility planning.

Sasaki's entry was selected over approximately 55 others in the competition. "For us, it's very significant. We've been doing work in China for about three years," says Sasaki principal urban designer Dennis Pieprz. "It's nice to win this one because it puts us on another level in our work in China."

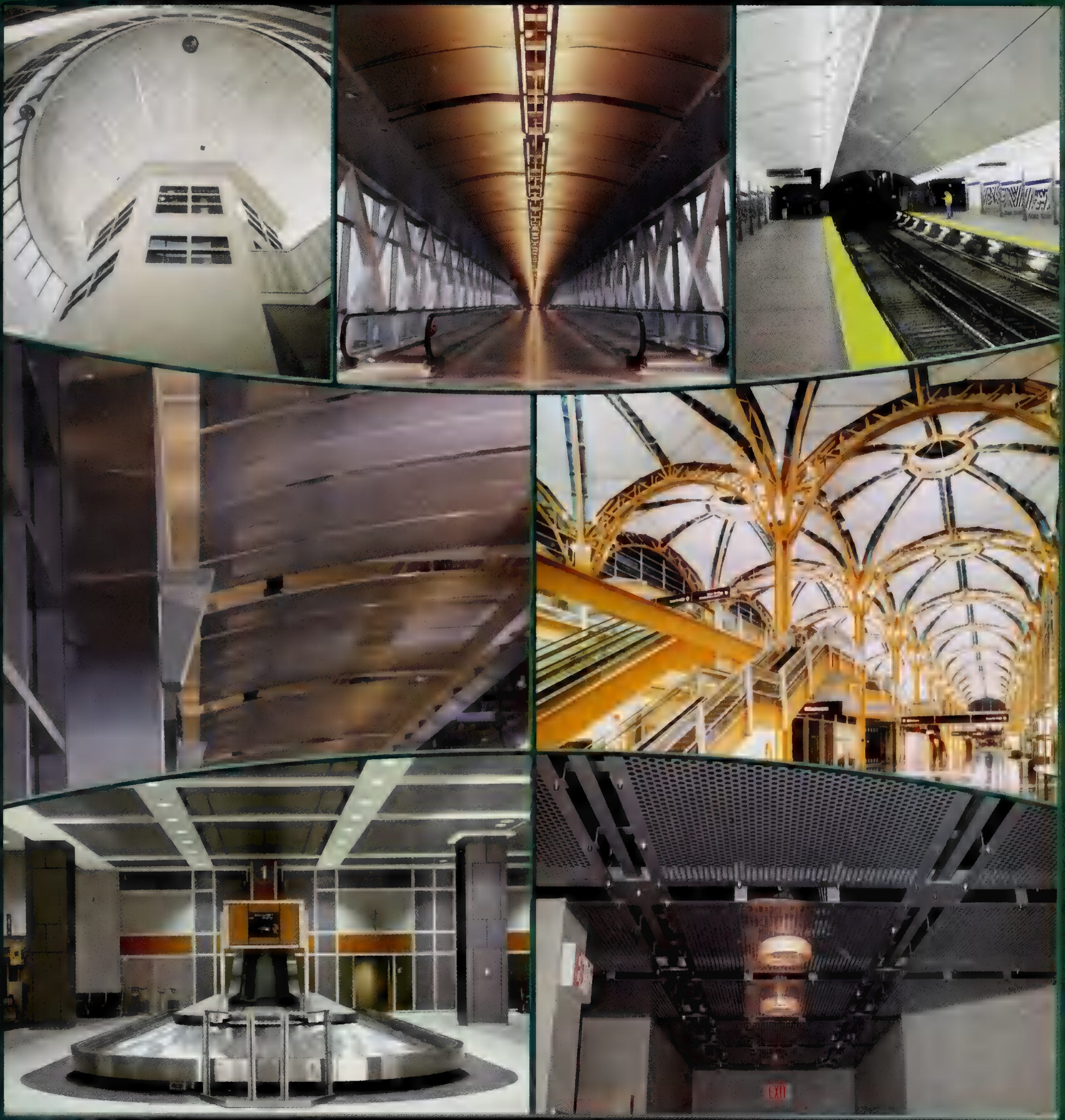


The Sasaki plan includes a forest park (top), an Olympic Village southwest of the park, and a stadium (red oval at lower right center).

The Sasaki plan includes a 1,680-acre forest park to the north (top of plan above) and 22 million square feet of new development—such as an Olympic Village just southwest of the park—as well as an 80,000-seat stadium (red oval at lower right center of plan), an 18,000-seat gymnasium, a swimming center with 15,000 seats, archery ranges, a convention and exhibition center, a youth cultural center, and a Beijing City Planning Museum.

Sasaki called its design proposal the "Axes of Human Achievement." The Olympic Green is sited on an extension of the north-south imperial axis—the historic spine upon which Beijing has developed over time and along which the Forbidden City, Tiananmen Square, and the Temple of Heaven are located. Liu Thai Ker, a Singapore architect who chaired the competition jury, said, "[Sasaki] respected abstract concepts like cultural relevance and historic perspective, allowing for future generations to shape that site."

Sasaki was also one of two firms to be awarded second prize in a separate competition for the design of the Wukesong Cultural and Sports Center. *J.E.C.*



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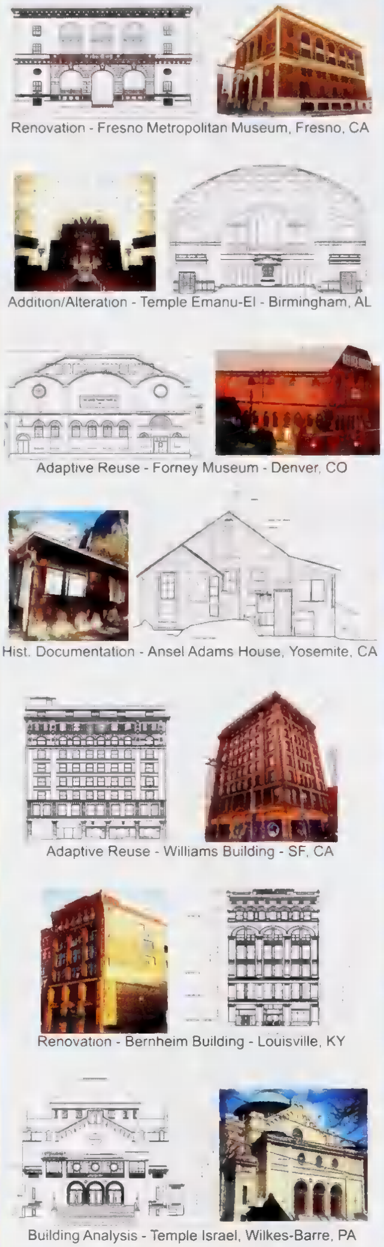
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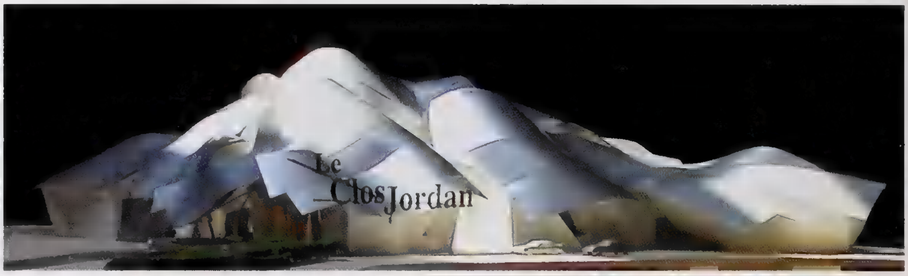

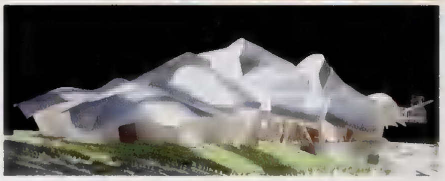

"Silver blanket" to cover Ontario winery by Gehry

Burgundy, Napa, Sonoma and … Ontario? Wine connoisseurs may soon be adding the Canadian province to their shortlist of pilgrimage sites—to experience a new high-end winery that its architect, Frank O. Gehry, FAIA, is calling "a cathedral for wine." The approximately 30,000-square-foot winery—named Le Clos Jordan—will occupy a 137-acre site on the Niagara escarpment near the town of Lincoln, about an hour's drive south of Toronto. The proposed building will be the first in Canada for Gehry, a Toronto native.

From the outside, the winery is dominated by its roof—an overlapping series of undulating metallic ribbons intercut with glass chasms to let light in. The choice of steel or titanium for the ribbons has yet to be made. "I wanted to make the building a landscape that floated through the vineyard," Gehry said. "That's hard to do—buildings are hard-edged—so I decided to make the roof like a silver blanket floating over the vineyard. I wanted to make it ephemeral and cloud-like so the closer you get, the more you realize it is a building."

The interior of the winery is based on a pinwheel form so that every stage of the winemaking process can be viewed at once from a multilevel Great Hall, rather than unfolding episodically. Five "pods" will include guest receiving and staff offices, grape receiving and pressing areas, fermenting rooms, and a tasting/sitting area. Catwalks around the edge of the atrium will allow visitors to view each of the pods from different perspectives. Eight floor-to-ceiling columns—possibly constructed of glass—will dominate the Great Hall. One idea still beihg considered is to have grape juice flow through the glass columns as part of a gravity-based system.

Le Clos Jordan is a joint venture between Vincor, Canada's largest wine producer, and France's Boisset, La Famille des Grands Vins. Vines from Burgundy have already been planted with the goal of creating ultra-premium estate wines. Completion of the building, expected to cost $19 million, is planned to coincide with the first harvest in 2006 or 2007. *David Maurer*

The wavy metal roof covers the Le Clos Jordan winery (top two) like a "silver blanket." Columns may be of glass filled with grape juice (left and above).

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National Trust reports on neighborhood teardown epidemic

Older houses are being torn down (left) for large "McMansions" that tower over historic homes (above).

An alarming number of houses in architecturally notable historic neighborhoods are being demolished to make space for speculative developments, according to a report issued in August by the National Trust for Historic Preservation.

The Trust's 25-page report, *Protecting America's Historic Neighborhoods: Taming the Teardown Trend*, examines neighborhoods where significant numbers of homes have been destroyed and replaced with oversize, contextually insensitive dwellings that the report refers to as "McMansions." Five case studies explore the causes and effects of the raze-and-rebuild trend in and around Chicago; Denver; Dallas; Newton, Massachusetts; and Bergen County, New Jersey. The Trust considers the problem to be so troubling that it included "Teardowns in Historic Neighborhoods Nationwide" on this year's list of America's 11 most-endangered historic places [RECORD, July 2002, page 38].

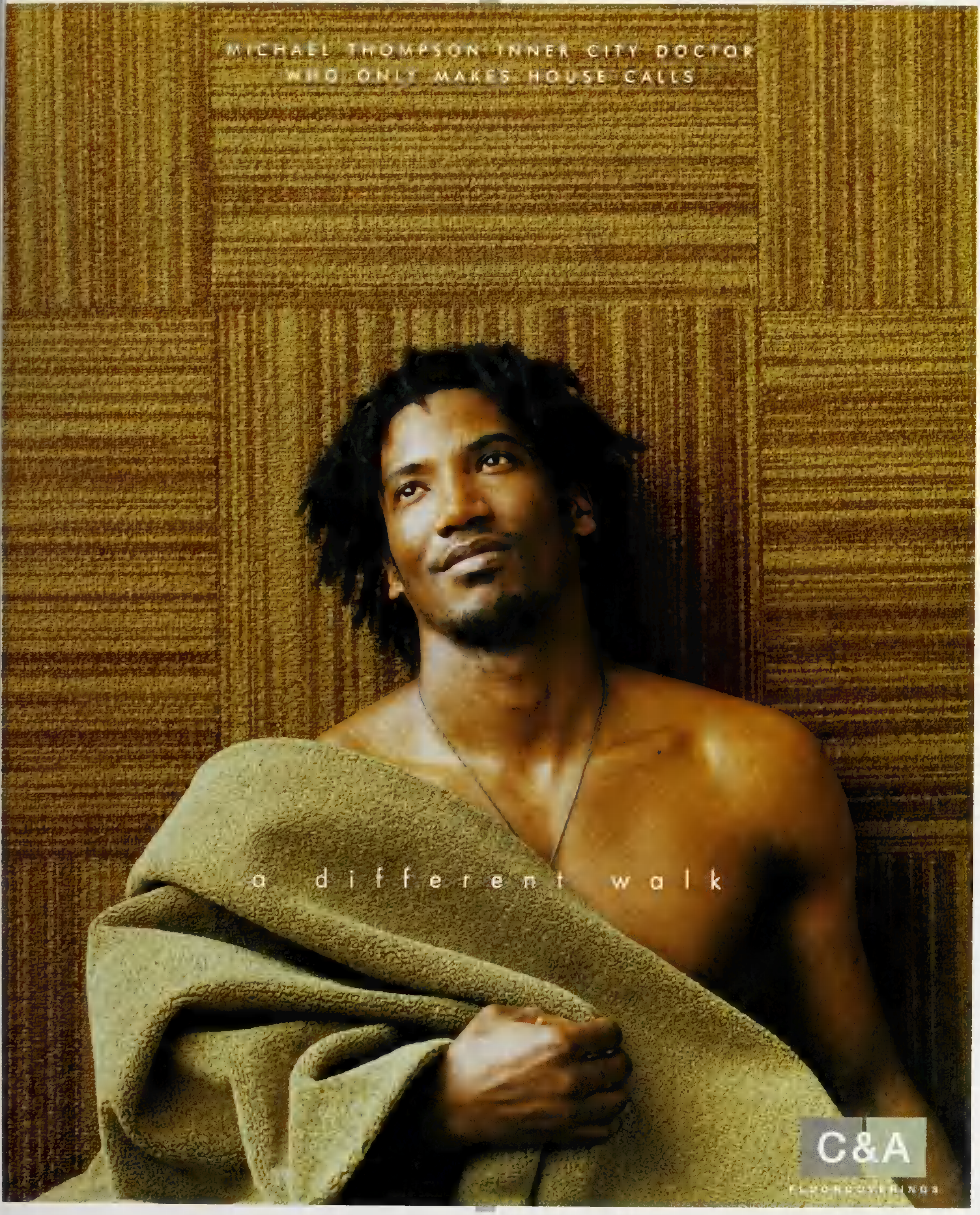
According to the report, inner suburbs are particularly at risk of teardowns as ex-suburbanites move nearer to a city but keep their preference for sprawl-scale houses. The teardowns seem to be driven by developers rather than by homeowners. Intended as a resource to would-be preservationists, the report offers a sampling of successful preservation practices. It explains a range of approaches, including halting new construction and also zoning for contextually sensitive infill. Zoning suggestions include instituting requirements for bulk, setback, and open space, as well as framing sensitive additions as an alternative to completely new buildings. The report also suggested mandating design reviews, creating tax incentives for preservation, and offering outreach programs to educate developers about the potential inherent in preserving historic buildings. *Tess Taylor*

Plan developed for secure yet beautiful D.C. public spaces

The number of Jersey barriers surrounding Washington, D.C., landmarks has increased dramatically since last year's terrorist attacks. Noting that such ad hoc security solutions "communicate fear and retrenchment" and disrupt street and sidewalk movement, the National Capital Planning Commission (NCPC) has released *The National Capital Urban Design and Security Plan*, which outlines strategies for redesigning public spaces to shield building occupants and visually welcome passersby.

Clearly influenced by the 1995 Oklahoma City bombing, the NCPC plan focuses on precluding vehicles carrying bombs through perimeter security measures. Lining curbs with decorative bollards and hardening street furniture are two suggestions for strengthening standoff distance while achieving sympathy with architectural context. The plan further tailors solutions according to specific places. For the Lincoln and Jefferson memorials, it recommends erecting perimeter plinth walls materially akin to the stone used in the monuments. To compensate for the loss of parking spaces on streets where parking has been restricted, the plan proposes constructing parking structures on sites throughout the city, as well as implementing a "Downtown Circulator" transit system to shift dependency away from the automobile.

The plan, which is estimated to cost $800 million to implement, is expected to reach Congress this fall. Visit www.ncpc.gov to read the document. *David Sokol*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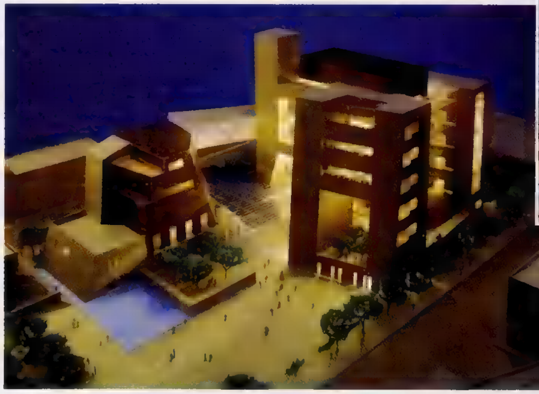
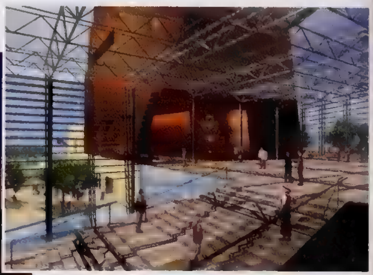




Indoor (above) and outdoor public spaces are integrated in El Paso.

Inspired by landscape, Predock wins two federal courthouse competitions

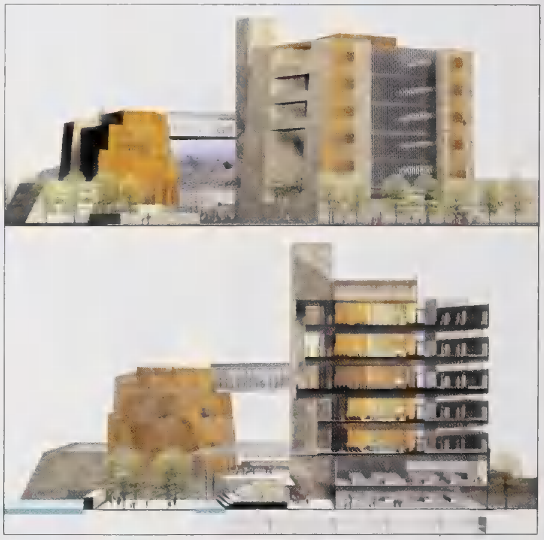
Antoine Predock, FAIA, has recently won two competitions for U.S. federal courthouses through the U.S. General Services Administration's Design Excellence Program. Predock, who has not had a courthouse project built before, won a competition for a courthouse in El Paso, Texas (shown here), which has a planned ground breaking in spring 2004. He also won a competition for a Las Cruces, New Mexico, courthouse (he was in contract negotiations at press time for that building).

With fellow Albuquerque firm BPLW Architects & Engineers as executive architect, Antoine Predock Architect won the El Paso competition against Enrique Norten of TEN Arquitectos of New York, Leers Weinzapfel Associates of Boston, and Lake/Flato Architects of San Antonio. Jurors were John Meunier of Arizona, Ronald Filson, AIA, of New Orleans, and Mehrdad Yazdani of Los Angeles.

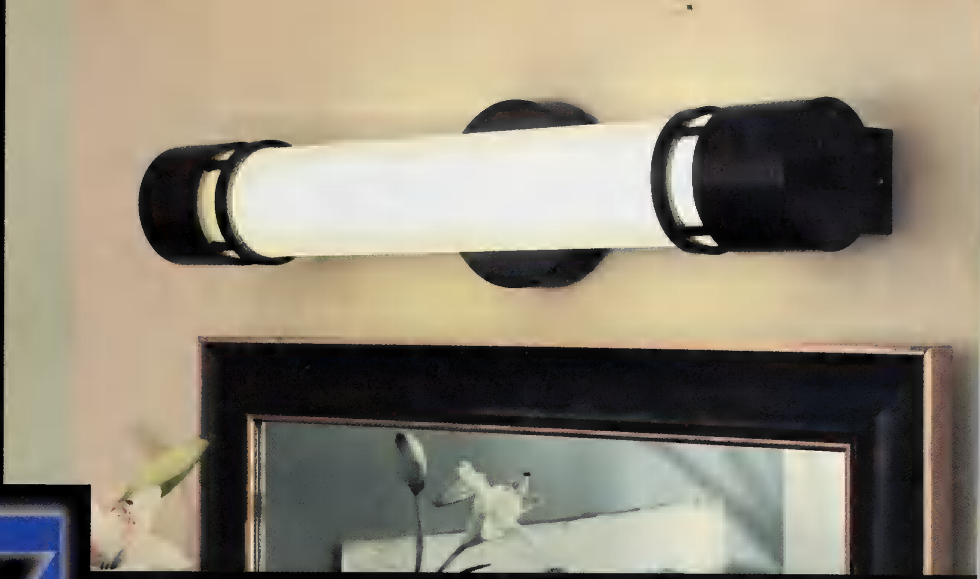
The site for the El Paso courthouse, which is planned for a summer 2006 opening, is adjacent to a relatively small, 1930s Beaux Arts–style courthouse on the edge of downtown. The program required the building to be approximately 232,000 gross square feet with 60 secured parking spaces and 11 courtrooms, including six district courtrooms and five magistrate courtrooms.

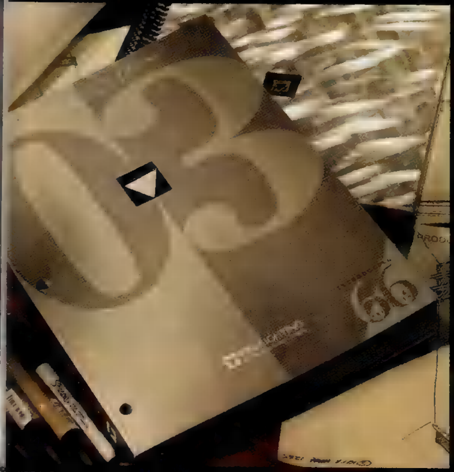
Predock designed the El Paso courthouse to relate to the mountains, the west Texas landscape, and the "majesty of land and sky," he told RECORD. The complex will include an entry portal or gateway between building masses with a view to the Franklin Peaks beyond. This design responds to the Paso del Norte that defined the pass from south to north and the Rio Grande that defined the pass through the mountains from east to west. A glass-enclosed library (in images below) spans this portal between the special proceedings courtroom and the main courthouse structure.

For the Las Cruces courthouse, Predock, again in association with BPLW, won the competition against Will Bruder Architects of Phoenix, Fentress Bradburn Architects of Denver, and TEN Arquitectos of New York. The Las Cruces building will include 205,000 square feet of space with 10 courtrooms—four district, five magistrate, and one bankruptcy. The jurors for the Las Cruces competition were Julie Snow, AIA, of Minneapolis, William Hellmuth, AIA, of Washington, D.C., and Michael Rotondi of Los Angeles. Roger Schluntz, FAIA, of Albuquerque served as adviser for both competitions. *J.E.C.*



Seen in elevation and section (above), a glass-enclosed library spans the portal between building masses in El Paso.





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66
NEW
DESIGNS

With lessons learned from 9/11, New York plans building-code changes for high-rises

A task force of New York City building, construction, and fire officials, as well as engineers and real estate leaders, is recommending safety improvements to the city's building code based on lessons learned from the collapse of the World Trade Center towers. The World Trade Center Building Code Task Force, led by the city buildings department, will present the guidelines to the New York City Council by year-end, and they may have a nationwide influence. Task Force member James Howie, a senior associate at Perkins Eastman Architects, says, "I'm hopeful that other cities will look at the recommendations as an outline to formulate some of their own."

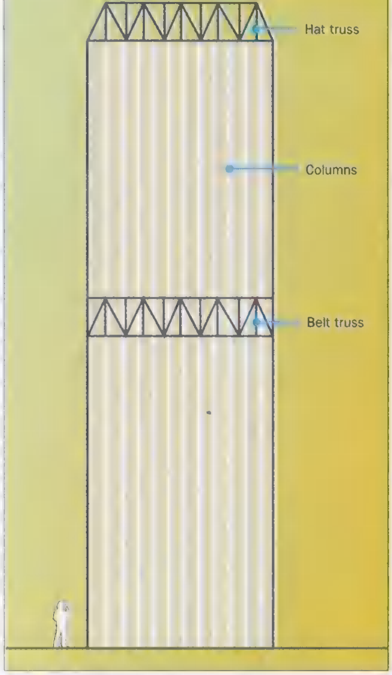
Many of the findings and recommendations are similar to those released this spring by the Federal Emergency Management Agency and the American Society of Civil Engineers [RECORD, June 2002, page 28], and to research currently being conducted by the National Institute of Standards and Technology.

The New York City task force, which has been working on this since March, will propose that the building code include new standards for emergency lighting, egress markings, and higher-visibility signage. Another recommendation is to move intakes for air-conditioning and heating systems away from street-level locations. Yet another possible measure is the creation of "safe areas" or "refuges" in elevator lobbies, where people could congregate in case of emergency.

For buildings to stand while sustaining structural damage, one possible recommendation will call for the implementation of belt trusses and hat trusses (see diagram, above) in new construction. Belt trusses could wrap around a building, transferring loads to undamaged columns and holding up floors after a collapse. Similarly, hat trusses on top of buildings could transfer loads from damaged to undamaged columns.

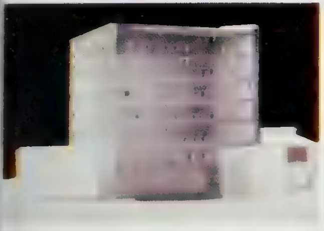
In addition to a public hearing held in August, the Task Force is forming its recommendations in collaboration with 9/11 victims' families and the local real estate community in order to strike a balance between protectiveness and economic practicality. Certain recommendations will be phased in over time.

Alterations to the building code must be approved by the city council and Mayor Michael R. Bloomberg. New operations standards, which the group is also now outlining, will be implemented by the New York City Fire Department. *D.S.*



The building-code changes may call for hat and belt trusses to be included in new high-rise construction.

News Briefs



Holl's Cornell building won't be built.

Holl design for Cornell architecture school will not be built Although Steven Holl won the competition to design the new home for the Cornell University Department of Architecture [RECORD, June 2001, page 35], his building will not be built. The university and Holl mutually agreed to dissolve their relationship this summer. A university architect-selection committee will choose a new architect, based on qualifications, later this month.

In a joint statement by Cornell University and Steven Holl Architects, Harold D. Craft, Jr., vice president for administration and chief financial officer of the university, said: "Converting [Holl's] design concept into detailed plans that would meet the program developed by the department was a difficult assignment for all involved."

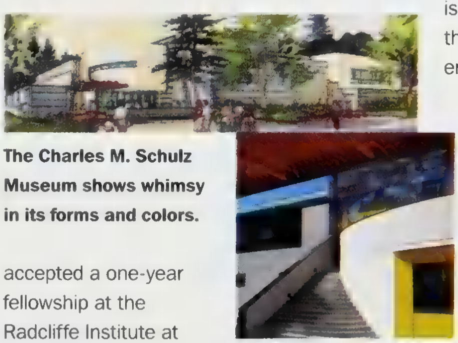
In the same statement, Holl said: "Like a brain surgeon operating on his own brain, making architecture for an architecture school is a peculiarly difficult challenge. I've been involved in the process of five different architecture schools and believe it is one of the most difficult architectural commissions. The unresolvable dialogue with Cornell is indeed an unfortunate situation."

Holl, whose scheme was chosen unanimously by the jury, won the competition in April 2001 against Thom Mayne of Morphosis, Tod Williams Billie Tsien and Associates, and Peter Zumthor.

Robbins leaves as NEA director of design—unclear if position will be filled; New Public Works ends Mark Robbins, the director of design at the National Endowment for the Arts (NEA) since 1999, announced in late July that he would not seek a renewal of his position. He left the NEA at the end of August and has accepted a one-year fellowship at the Radcliffe Institute at Harvard University.

Robert Frankel, the newly appointed NEA director of visual arts, media, and literary arts, will have interim oversight of the NEA design programs beginning this month. A spokesperson for the NEA noted that the position of design director has not been eliminated, but the NEA will "consider the possibility of recruitment for the position" when it reviews its fiscal year 2003 budget in October.

Also, the NEA's three-year-old New Public Works program, which funded national design competitions for a range of public works projects, is coming to an end after this year's grant recipients are announced.



The Charles M. Schulz Museum shows whimsy in its forms and colors.

Charlie Brown featured in Schulz Museum San Francisco firm C. David Robinson Architects designed the Charles M. Schulz Museum to be—like Schulz himself—modest, low-key, and comfortable, to honor the creator of the *Peanuts* comic strip. The 27,000-square-foot museum opened in August in Santa Rosa, California, where Schulz lived before his death in 2000. *J.E.C.*

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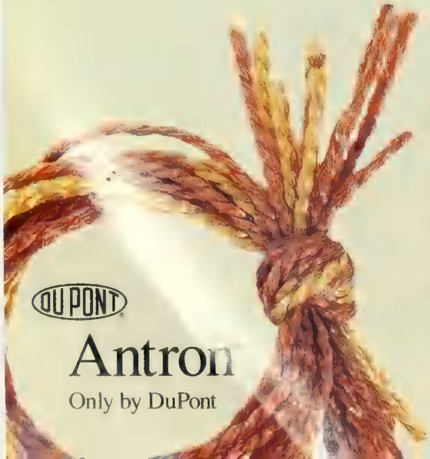

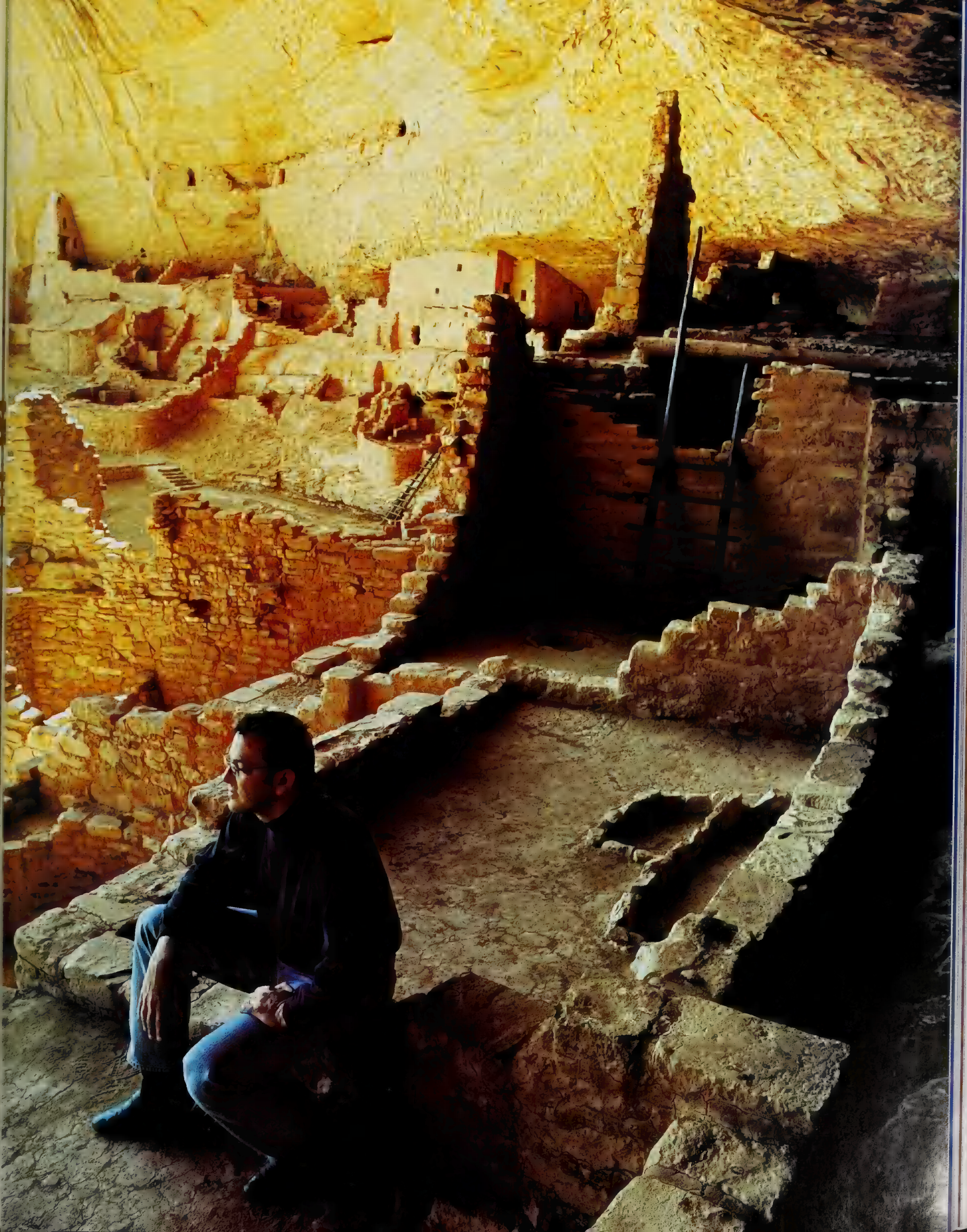

Dates & Events

Ongoing Exhibitions

The City of K.: Franz Kafka and Prague
New York City
August 11, 2002–January 5, 2003
With video, light, sound, and photographs, this exhibition enters into the world of Kafka's imagination and gives a visual presence to the environments of his writings. With a focus on Prague from the end of the Austro-Hungarian empire through the Great War, the show illuminates the urban landscape that sustained the writer. At the Jewish Museum. Call 212/423-3271 for more information.

Consuming Places
Brooklyn, New York
August 15–October 27, 2002
Making use of a neglected public space in DUMBO (Down Under the Manhattan Bridge Overpass), this exhibition includes site-specific work that activates its waterfront setting, and it incorporates the site's historic 19th-century structures. Works are by architects and designers Asymptote, Bill Fontana, and 212box. On Water Street between Main and Dock streets. For more information, call 212/206-6674 or visit www.creativetime.org.

Zaha Hadid Laboratory
Washington, D.C.
August 17–November 17, 2002
Zaha Hadid, the "queen-bee" of the international superstar architect clique, exhibits her recent projects in drawings, photographs, paintings, and models. The Yale School of Architecture organized the show. At The National Building Museum; visit www.nbm.org for more information.

Helmut Jacoby: Master of Architectural Drawings
Chicago
August 31–October 27, 2002
Quite possibly the best-known architectural renderer of the 20th century, Jacoby has worked for some of the brightest stars in architecture—from his earlier days in America with Philip Johnson, Eero Saarinen, I.M. Pei, Marcel Breuer, and others to his later work with international architects such as Sir Norman Foster and Helmut Jahn. His work serves to document the evolution of architecture from the '50s through the '70s. At Kisho Kurokawa Gallery, Art Institute of Chicago. Call 312/443-3600.

Trespassing: Houses x Artists
Bellevue, Washington
August 31, 2002–January 5, 2003
New York City–based architecture firm OpenOffice invited nine artists to reimagine the possibilities of the house in conceptual terms. Ideas generated were mediated through OpenOffice into architectural proposals that redefine the spatial, psychological, and technical conventions of domesticity. At the Bellevue Art Museum. Call 425/519-0754 or visit www.bellevueart.org for more information.

3D City: MVRDV
New Haven
September 4–October 5, 2002
MVRDV, the Rotterdam-based architecture firm, uses complex data systems to inform its urban designs, which emphasize density and verticality as prime issues in city environments. This installation showcases MVRDV's obsession with information as a means to visualize the city. At the Yale School of Architecture. Visit www.architecture.yale.edu for more information, or contact 203/432-2288.

Skin: Surface, Substance + Design
New York City
Through September 15, 2002
This exhibition skims the surface to explore the different ways skin is articulated in design. On display are a variety of objects and artifacts by such designers as Greg Lynn, Petra Blaisse, Ross Lovegrove, and Marcel Wanders, organized into five themes. Each theme delves into questions of beauty, technology, and artificial life. At the Cooper-Hewitt National Design Museum. Contact 212/849-8400.

Living in Motion—Design and Architecture for Flexible Dwelling
Weil am Rhein and Berlin
Vitra Design Museum, Weil am Rhein: through September 8, 2002; Vitra Design Museum, Berlin: September 21, 2002–January 26, 2003
This exhibition covers furniture and houses that reflect flexibility, multifunctionalism, and mobility, prime examples being Rietveld's Schroeder House, Shigeru Ban's Naked House, and Steven Holl's Fukuoka Apartments, among others. It covers a wide variety of cultures in its attempt to portray domestic flexibility. At the Vitra Design Museums, Weil am Rhein and Berlin. In the U.S., call 212/539-1900; in Europe, call 49 7621 702 3351.

Designing Oakland
Pittsburgh
Through September 22, 2002
This exhibition discusses Oakland—the neighborhood in Pittsburgh, not the city in California—and is the second of the series of *Pittsburgh Neighborhoods Projects* exhibitions organized by the Heinz Architectural Center. It tells the story of the evolution of the neighborhood from an urban getaway to a cultural center sharing the spotlight with downtown. At the Heinz Architectural Center in the Carnegie Museum of Art. Call 412/622-3131 or visit www.cmoa.org.

Visions from America: Photographs from the Whitney Museum of Art, 1940–2000
New York City
Through September 22, 2002
The museum's first photograph exhibition comprising work from its own permanent collection consists of images by established as well as emerging artists whose photography has been collected by the Whitney over the past 11 years. At the Whitney Museum. Call 212/570-3633 for information.

SHOPPING
Frankfurt
September 24–December 8, 2002
This exhibition analyzes the cultural phenomenon of shopping in the art of the 20th and 21st centuries. More than 70 artists are featured, all of whom, in some way or another, have dealt with consumer culture through visual art, architecture, and film. Among the artists on display are Rem Koolhaas, Marcel Duchamp, Jeff Koons, Claes Oldenburg, Gerhard Richter, and Andy Warhol. At the Schirn Kunsthalle Frankfurt. Call 069 29 98 820.

Out of Site
New York City
Through October 13, 2002
This exhibition focuses on how technology and communication have impacted modern-day culture. A team of international artists have come together and responded to this question by reshaping space using different forms of media for analysis. The show will be held at the New Museum of Contemporary Art. Call 212/219-5328 for more information.

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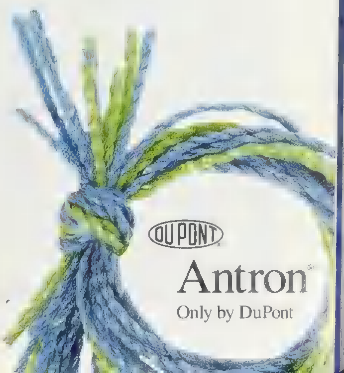


Challenging Structure: Frank Gehry's Peter B. Lewis Building
Cleveland
October 6, 2002–February 24, 2003
This exhibition illustrates the development of Gehry's School of Management building at Case Western Reserve University, opening September 2002. The show is a convenient city-block away from the real building. See the work in all stages, from initial conception, and then experience the built reality. At the Cleveland Museum of Art. Contact 216/707-2261 or www.clevelandart.org.

On Track: Transit and the American City
Washington, D.C.
Through October 29, 2002
Transportation is arguably the most important element in a city's infrastructure; its development dictates the changing forms of the city. This exhibition showcases the spatial and technological relationship between transit and urban environments. Visit www.nbm for more information.

Krier/Eisenman: Two Ideologies
New Haven
November 4, 2002–February 7, 2003
The debate between the opposing architectural philosophies of Krier and Eisenman is the subject of this exhibition. Work by Krier, who focuses on considerations of context, site, and function to inform his designs, will be displayed across from Eisenman's, who regards abstract form as the architect's singular consideration. The exhibition is supplemented with a symposium on November 8–9 (see below). At the Yale School of Architecture. Contact 203/432-2288 or visit www.architecture.yale.edu.

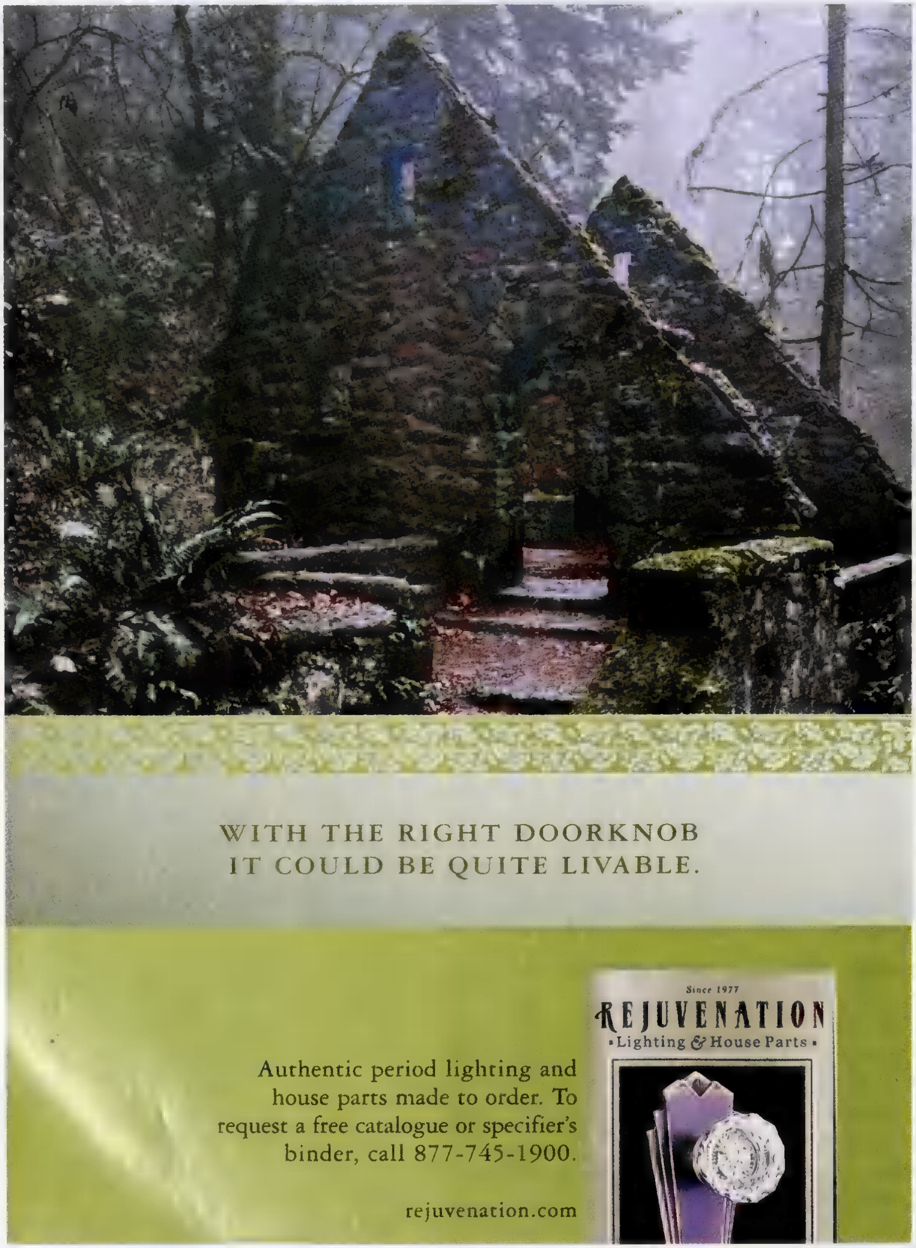
Lectures, Symposia, & Conferences

Architecture Week 2002
Washington, D.C.
September 7–14, 2002
Architecture Week in D.C. includes appropriate end-of-summer activities, such as an exhibition of giant structures made out of canned goods, free walking tours, and lectures by Thom Mayne and others. At various locations. Call 202/667-1798 or e-mail reservations@aiadc.com for more information and event reservations.

5th International Architecture Symposium Pontresina
Pontresina, Switzerland
September 12–14, 2002
This symposium is tackling a wide variety of issues that are of importance in the world of architecture today. The main discussion points will be the development of a new form of architecture for minority groups in poor cities, and the concept of the Global Guggenheim and the complex relationship between architecture, art, and business. At Congress Centre Rondo, Pontresina, Switzerland. Call 41 081 838 8318 or visit www.archisymp.com.

Insecure: Architecture in an Uncertain World
Montreal, Canada
September 14, 2002
A discussion of the impact on architecture of the events of September 11, 2001, with a focus on insecurities that architects and developers now confront. Discussions led by Federic Migayrou of the Centre Pompidou and Mark Wigley of Columbia University. At the Canadian Centre for Architecture. Call 514/939-7000 or visit www.cca.qc.ca for more information.

Make It New Downtown
Los Angeles, California
September 16 2002
To kick off Sci-Arc's "Make It New" fall lecture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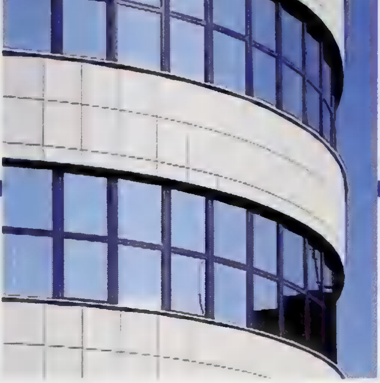

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A Ventilated Wall System that provides external cladding with the highest level of customization and has a significant aesthetic impact.

The system comprises several elements:

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- Substructure to support the cladding;
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BASIC PRINCIPLES

In terms of thermal protection and the mechanism of vapor diffusion, the performance of the Ventilated Wall System is exceptional and totally guaranteed provided that:

- The thermal resistance of the various layers of the façade increases from the inside of the building outwards.
- The resistance to vapor diffusion, on the contrary, decreases from the inside outwards.

BENEFITS

- Reduces the dampness on walls in new and renovated buildings with a ventilated façade
- Prevents the formation of thermal bridges
- Provides a comfortable climate indoors by preventing heat from escaping in the winter and/or entering in the summer
- Lowers energy consumption
- Improves the sound absorption in new and renovated buildings

FEATURES

- Long life and great strength
- Cost-efficient structure for both building and maintaining
- Modern architecture created by using a wide array of sizes, colors and ceramic types

A.G.V. SYSTEM

(Marazzi Tecnica's Ventilated Wall System with ceramic face using **exposed hooks**.)

The A.G.V. Exposed Fixing System is achieved by applying ceramic plates to the load-bearing structure with stainless steel hooks of the Standard Type (for four plates) and of the Base Type (for two plates).

The complete system; ceramic, substructure and fixing is certified by the Construction Institute of Berlin with No. Z-33.1-74 for ceramic sizes up to 24" x 36". The system is composed of:

- **Ceramic Face:** Ceramic tile obtained with Firestream technology (glazed on an incandescent body), and Marlit technology (Fine Porcelain Stoneware).
  Sizes: 24" x 36", 24" x 24" and small sizes obtained by cutting;
- **Substructure:** Hooks in AISI 316 L stainless steel, load-bearing structure in extruded aluminum with minimum thickness of 2.5 mm, rivets and expansion screws;
- **Thermal Insulation:** Self-bearing panels in fiberglass are water-repellent.

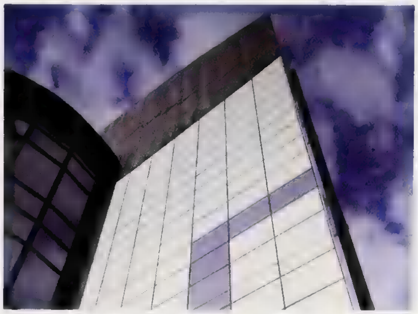
A.G.S. SYSTEM

(Marazzi Tecnica's Ventilated Wall System with ceramic face using **concealed hooks**.)

The A.G.S Concealed Fixing System is achieved by fitted screw anchors on the back of the plates. Tapered-cylindrical holes are made on the back of the plate to house the anchors.

The complete system; ceramic, interface with the structure (screw anchors), substructure and fitting is certified by the Construction Institute of Berlin with No. Z-33.1.44 for ceramic sizes up to 24" x 36". The system is composed of:

- **Ceramic Face:** Ceramic tile obtained with Firestream technology (glazed on an incandescent body), and Marlit technology (Fine Porcelain Stoneware).
  Sizes: 24" x 36", 24" x 24" and smaller sizes obtained by cutting;
- **Substructure:** Plate-structure interface by means of screw anchors in stainless steel, load-bearing structure formed by brackets for fastening to the plates, vertical and horizontal framework, brackets for applying to the walls in extruded aluminum, rivets and screw anchors;
- **Thermal Insulation:** Self-bearing panels in fiberglass are water-repellent.



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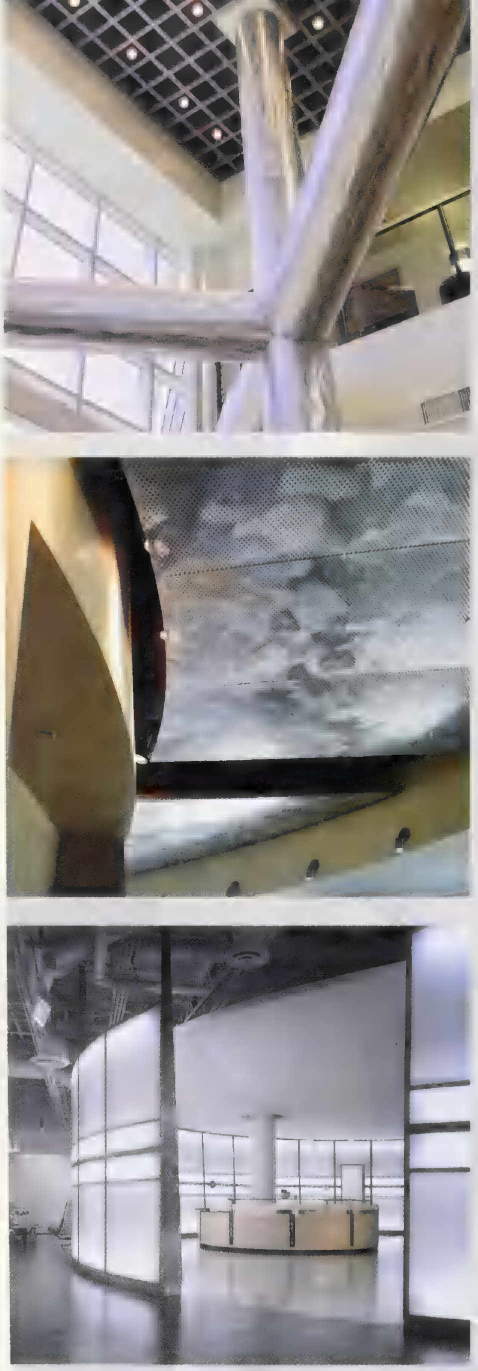

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series is a panel discussion led by director Eric Owen Moss. The emphasis will be on reinventing ideas of the city, in a style that bridges academic considerations and real-life practicality. Lectures continue on a biweekly basis through December. At SCI-Arc Gallery. Visit www.sciarc.edu/calendar for more information.

Frank Lloyd Wright and the Modern Metropolis
White Plains, New York
September 18–22, 2002
The annual conference of the Frank Lloyd Wright Building Conservancy is directed toward Wright's documented affinity to New York City, despite the general belief that he was "anti-urban." His ideas for reconstructing the metropolitan region in organic terms will be discussed, with architecture critic Herbert Muschamp of *The New York Times* as the keynote speaker. At the Renaissance Hotel. For more information, call 773/324-5600 or visit www.savewright.org.

Montreal: City of Contrast
Montreal
September 19–22, 2002
This conference comprises a discussion, tour of, and reflection about the architecture and urban development of the culturally diverse city. Lectures by professors at McGill University and the Canadian Centre for Architecture, and student and young architects' presentation of work, give insight into the potential of the city's future developments. At the Hilton Bonaventure Hotel. Call 514/878-2332 for more information.

Mixed-Use Development
Des Moines
September 27–29, 2002
Addressing the current urban context of Des Moines and the potential for future developments, this conference will attempt to use the city as a model for other Middle-American river cities with similar terrain and layout. It will also showcase the architectural achievements in the city by architects such as I.M. Pei and Eero Saarinen. For more information, call 515/283-4754 or visit www.aia.org.

The First Symposium on Space Architecture
Houston
October 10–19, 2002
With recent discussions on the potential to inhabit the Earth's orbit, questions arise as to what kind of visual form new space vessels will take. The Symposium on Space will discuss the related research by architects, industrial designers, and sociologists, and their ideas and forms for space habitation. Designs and experimental studies for orbital, lunar, and planetary dwelling will be examined. At The World Space Congress 2002. Call 703/264-7500 or visit www.aia.org.

Krier/Eisenman: Two Ideologies
New Haven
November 8–9, 2002
In conjunction with the exhibition of the same name at the Yale School of Architecture, this conference will put the two architects in real-time debate over architecture's relevance as a social enterprise and the focus on architectural form. Panel speakers will include Stan Allen, Kurt Foster, Kemitri Porpyrios, and Mark Wigley. At the Yale School of Architecture. Contact 203/432-2288 for more information, or visit www.architecture.yale.edu.

Constructing Beijing 2008
November 13–14, 2002
This conference brings together international architects and engineers to discuss the development of Beijing, with emphasis on the 2008 Olympic Games. Construction will take place over the next five years and will include sports complexes, public spaces, landscape, signage, and public transportation; the project is a microcosm of a city embedded within a city. It coincides with a design competition for design students in Hong Kong and Beijing. At the Beijing New Century Hotel. Call 852/2238-9940 for more information, or e-mail kate.newman@hongkong.messefrankfurt.com.

AIA California Council Desert Practice Conference 2002
Indian Wells, California
November 15–17, 2002
This conference attempts to clarify the business of the practice of architecture. The conversation will cover project delivery, business and practice management, emerging practices, future trends, and expanded services. At Renaissance Esmeralda Resort. Call 916/448-9082 or visit www.aiacc.org/conferences.

35th International Making Cities Livable Conference
Monterey/Carmel, California
December 8–12, 2002
An international conference for architects, urban

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DESCRIPTION

The modular Raised Floor System is a truly self-contained system which allows the creation of a new unobstructed space for the installation of technical components for present and future use.

The system is made up of different elements:

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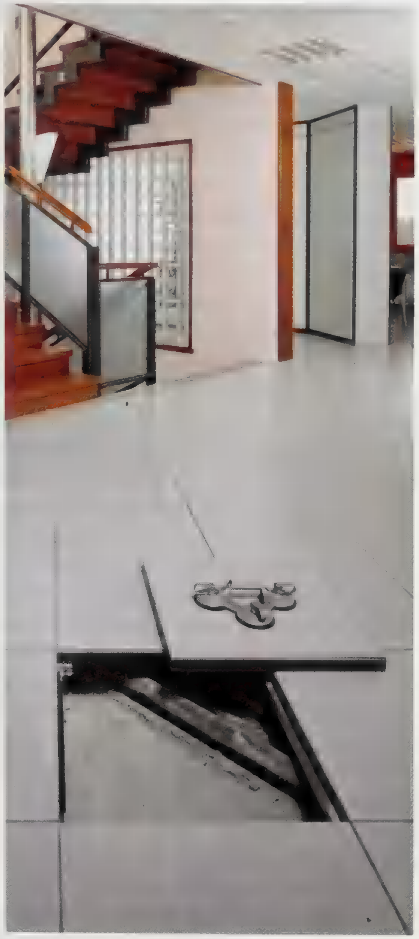

BENEFITS

- Adds flexibility into the design process; changes that are normally required between the design and execution stages can be assimilated quickly and easily.

FEATURES

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- The following types of supporting paneling: calcium sulphate, high density particle board and mixed (a layer of particle board bound to a layer of calcium sulphate).
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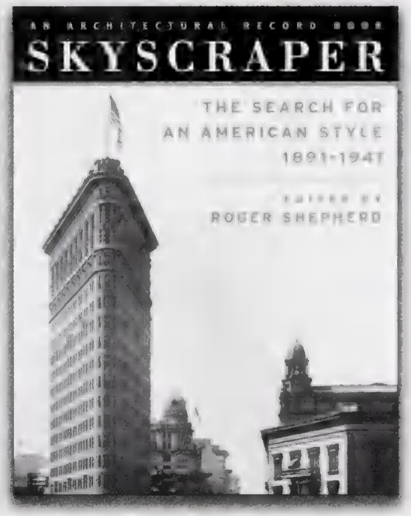
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Conventions

Rail-Volution 2002
Washington, D.C.
October 3–6, 2002
This year's conference focuses on the community's role in making transit and land-use decisions and brings a unique cross section of citizen activists, business leaders, elected officials, and planners to the table to discuss the issues. Rail-Volution features a variety of sessions, including hands-on workshops, case studies, and moderated panel discussions. Contact 800/788-7077.

NOMA International Congress and Exposition
Ft. Lauderdale, Florida
October 15–18, 2002
An opportunity provided by the National Organization of Minority Architects to showcase their work and interact with other architects and design professionals. At the Wyndham Bonaventure and Spa. Call 301/941-1065 or e-mail avery@noma.net.

[Un]Bounding Tradition
Hong Kong
December 12–15, 2002
For the eighth conference of the International Association for the Study of Traditional Environments, the theme is land border and regional tensions. Academic papers will be presented on topics such as ethnicity and regionalism, border spaces, and hybridity. Speakers include professors Neil Leach and Ackbar Abbas. Contact the IASTE at 510/642-6801 or visit www.arch.ced.berkeley.edu/research/iaste.

Competitions & Awards

Shinkenchiku Residential Design Competition 2002
Deadline: September 2, 2002
This competition, held annually by The Japan Architect, invites architects from around the world to explore the theme "Dwelling Where the Muses are Served/Spared Emptiness." The entire competition will be judged by Daniel Libeskind. Sponsored by the Shinkenchiku-sha Company. Visit www.japan-architect.co.jp for more information.

Pentagon Memorial Design Competition
Deadline: September 11, 2002
An open, two-stage competition to select a design for an outdoor memorial on the grounds of the Pentagon, near the site of impact of the September 11, 2001, attack. The goal is to honor the victims, and any individual or team may enter. For more information, call Mary Beth Thompson at 410/962-2809.

Seattle Case Study Homes
Deadline: September 20, 2002
Architects and designers are invited to submit designs for a publication. For information about submissions, see the Web site www.seattlecasestudyhomes.com.

Messe Frankfurt Architecture & Technology Award
Frankfurt, Germany
Deadline:September 30, 2002
Freelance architects and engineers are invited to submit design proposals for renovations of an existing European commercial building. Focus is on sustainability and building operations. For more information, contact www.messefrankfurt.com or call 49 69 7575 6477.

Tilt-Up Construction Association Achievement Awards Program
Deadline: October 1, 2002, with supporting materials due October 15, 2002
The purpose of this awards program is to recognize outstanding site-cast Tilt-Up structures. There is a $100 entry fee for each project submitted. Submittal forms and directions can be found on the TCA Web site, www.tilt-up.org, or obtained by contacting TCA at 319/895-6911.

International Competition for the Urban Development and Planning of Sustainable Housing in Guanajuato, Mexico
Deadline: October 15, 2002
The Federation of Architects of the Mexican Republic invites architects to submit designs for a sustainable urban housing complex. The program calls for 6 housing prototypes, with emphasis on sustainable public spaces, energy management, and water and waste recycling. For more

information and to submit a design, call 52 5 5550 6049.

26th Annual Cooper Source Awards
Deadline: October 25, 2002
Open to any lighting designers, architects, interior designers, or other professionals who use light in an interior or exterior application. Two categories are available, one for professionals, the other for students, who will compete for a $1,500 cash prize. For more information, visit www.cooperlighting.com.

The Rome Prize
Deadline: November 1, 2002
The prestigious Rome Prize, whose historic winners include Louis Kahn, offers hefty stipends for advanced research and independent study in architecture, design, and other humanities-related fields. For more information, contact the American Academy in Rome at 212/751-7200 or visit www.aarome.org.

Mobile HIV/AIDS Health Clinic
Deadline: November 1, 2002
Architecture for Humanity, a nonprofit organization, announces its 2002 international design competition. Architects are invited to submit designs for a fully equipped mobile medical unit and HIV/AIDS treatment center for use specifically in Africa. Entry fees, donations, and additional fund-raising sources will be used to build the winner's prototype. Visit www.architectureforhumanity.org for information.

International Competition for the Design of "Ephemeral Structures in the City of Athens"
Deadline for dispatch or handing in of entries: November 11, 2002
Deadline for receipt of mailed entries: November 25, 2002
The Hellenic Cultural Heritage SA, supported by the Hellenic Ministry of Culture, is organizing this competition for the 2001–2004 Cultural Olympiad and the Athens 2004 Olympic Games. The program includes event platforms for music, dance, and other events that don't require seating; open-air theaters; and semi-open exhibition spaces, among others. For more information, call 33 10 976 95 10, visit www.culturalolympiad.gr/ephemeralcompetition, or e-mail ephemeral.competition@eeogroup.gr.

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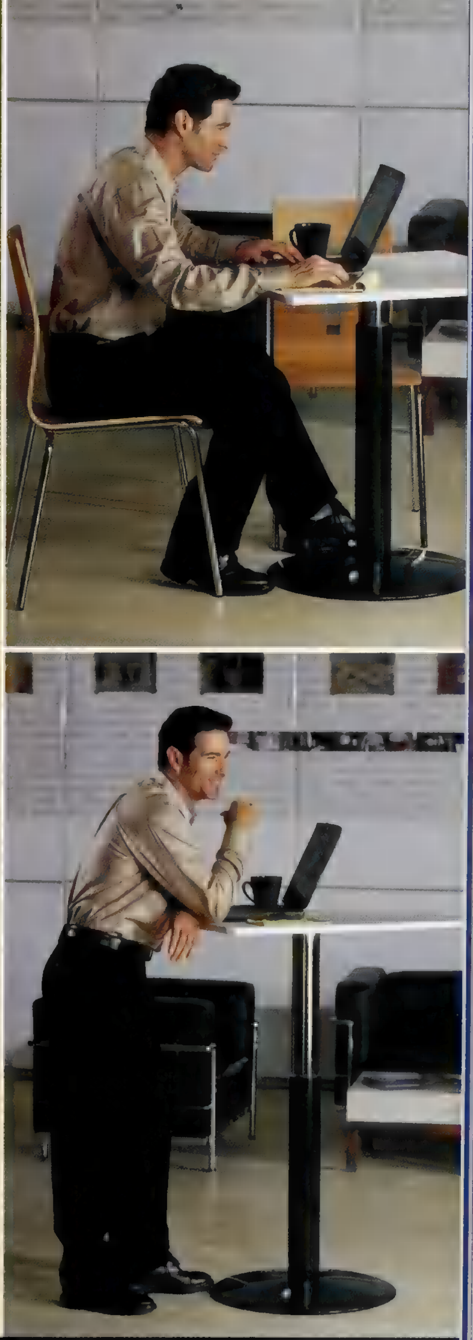

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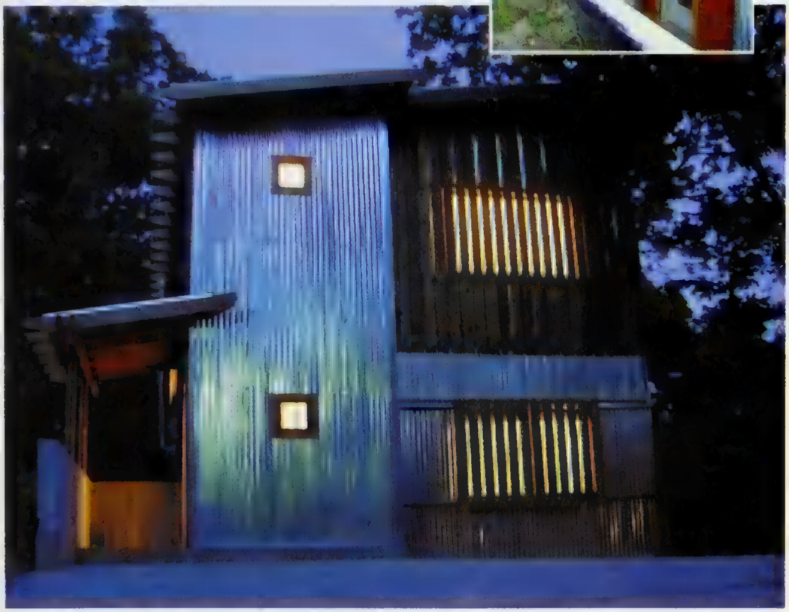
FOR THE EMERGING ARCHITECT

September means back to school, and this month archrecord2 tries something different in honor of that. Instead of the usual Design profile, the lead story this month takes a look at a studio at the University of Arkansas, and the low-budget house the team designed in one semester and built in the next. The other story in this issue is also a Work story, and again focuses on schools, this time a high school in Philadelphia that teaches design. For Live and Talk, check out the Web site.



WORK

Low cost, high design, extra credit

Phillip Todd, a recent graduate of the University of Arkansas's architecture program, describes northwest Arkansas as "the Tyson Chicken and Wal-Mart capital of the world." So when he was called upon to submit a house design for a design-build studio he was taking in the 2001–2002 school year, he decided to make the best of his surroundings. "I tried to go along with the local vernacular," Todd said, "which is barns and chicken houses. So we have a lot of materials like corrugated metal and barn hardware available to us."

His approach worked with his classmates and with the Bank of Fayetteville, which underwrote the project. The course's professors, Eva Culterman and Greg Herman, set an ambitious program for the yearlong course: Take a low-budget house from design to completion in a single semester. During the fall semester, the 16 students in the class worked individually on designs for a 1,200-square-foot house and met once a week on an informal basis to discuss their progress. By the end of the term, the 16 designs had been narrowed to four by a vote of the class. These four designs were presented to the board of the bank, and Todd's design came out on top. The bank and the school had collaborated before, with the same program: three bedrooms, two baths. In addition to the construction budget, the bank provided the lot and chose the family who would eventually live in the house.

"I've actually met the family that's getting the house," Todd said. "They've been an active part of the process. They came out once or twice a week, to see how things were going and give feedback. I was glad to see that it was going to someone who was really excited about the house, instead of someone chosen based just on income. I think it was a big advantage to the entire class; we felt a lot better about it knowing that it was going to be enjoyed."

Todd used his winter break to secure permits for the house. When they finally came through in mid-January, 2002, the team began work. Besides the foundation, insulation, plumbing, and electricity, every part of the house was built by the 16 students. In addition to Todd, the team included Steve Click, Carolyn Pike, Heiko Mueller, Justin Couch, Mark Herrmann, Brett Abbott, Deric

Design-Build House, Fayetteville, Ark., 2002

University of Arkansas design-build studio—Phillip Todd, lead designer. Constructed over the course of a single academic semester, this house cost $65,000 to build. Students did every job except for the insulation, foundation, plumbing, and electrical work.

(continued from previous page) Louton, Katie Breshears, Josh Danish, J.B. Mullins, Ben Butler, John Bredehoeft, Aaron Scott, Davide Tinto, and Cory Whalin.

They worked well together. "We were ahead of schedule for a long time," Todd said. "But we had some rain delays, and finished right on time. I'm surprised how fast it went."

The late Sam Mockbee, the respected master of the low-cost design-build studio, was surprised, as well. He visited the program in the 2000–2001 school year and told the professors that he was amazed that a building could be completed in a single semester. According to Todd, the University of Arkansas's program is the only studio that completes an entire house in one semester.

Now that he has his degree, Todd has moved on to the working world, but he hasn't fallen far from the nest. Still working in Fayetteville, Todd joined a design-build studio that specializes in houses.

"Lots of people move into Fayetteville to subdivisions with huge houses for $700,000 dollars that look just like the ones next to them," Todd said. "People come to our firm wanting that stuff, and we just tell them no, because it's against what we're trying to go for." *Kevin Lerner*

Go to *architecturalrecord.com/archrecord2* for more images of the University of Arkansas design-build house, and pictures of the team.

The double-height interior gives the house an open feeling, despite being smaller than a previous plan for the same program.

WORK

Fast Times at Architecture High

For the students who signed up for the first year of courses at Philadelphia's Charter High School for Architecture and Design (CHAD)—one of the few schools in the nation devoted to educating young designers—design wasn't on their minds so much as was getting out of the city's public school system. CHAD was one of eight public charter schools that the State of Pennsylvania approved in 1999. Since then, the school has gone from simply a decent place to spend school hours to a hub of creativity that makes some B.Arch. programs look downright remedial.

Straight out of eighth grade, students are directed into a drawing course taught by a medical illustrator. "Out of middle school, the vast majority haven't had formal art training," explains Cristina Alvarez, assistant principal for admissions. Freshmen also take a model-making course. Sophomores double their design-related courses to two periods a day. Juniors and seniors may add more design courses, increase their studio time, or take advantage of outside mentoring programs.

At CHAD, the course work and after-school activities—which include shadowing professionals and working with the city's celebrated Mural Arts Program—are supplemented by a sense of mission that permeates the school.

Educators and others involved with CHAD pursue their work at a level of excitement that's rare and infectious. David Macaulay, author of *The Way Things Work* book series, spends two days a year with students and speaks highly of their "sense of professionalism." After only a few moments watching a CHAD student film at a meeting of arts educators at the Cooper-Hewitt, National Design Museum this July, Doreen Nelson, founder of the Center for City Building Education, was smitten. Recent visitors like Hani Rashid and Lise Ann Couture of Asymptote make return visits or pull students into projects and exhibitions.

Barbara Chandler Allen, the school's director of development and mentoring, has a simple explanation for CHAD students' enthusiasm: "We help them find their purpose in life." *Jason Clampet*

Read an extended version of this article at *architecturalrecord.com/archrecord2*.

On the Web, archrecord2 presents an archive of exciting young designers. Go to **architecturalrecord.com/archrecord2** to see their portfolios and to participate in an ongoing forum for emerging architects.

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Power plays at Ground Zero: backroom schemes, laptop democracy, and a howl of protest

Critique

By Michael Sorkin

Admittedly, I went to the July 20 Listening to the City" meeting at he Javits Center with visions of myself as that woman in the legendary Macintosh commercial, running through an auditorium of passive plebs to hurl her hammer at he monster screen on which Big Brother was proclaiming what a fine and orderly place the Orwellian world was. The setup seemed to confirm my worst fears for the event: 5,000 people arbitrarily assigned to 500 tables, watching speakers and images on giant video screens, each participant equipped with a remote-control keypad for "voting," each table with a volunteer "facilitator" (ours a German from Toronto) and a laptop on which to communicate with a team of compilers who would determine opinion trends in the room.

No more reassuring was the parade of the usual white men—from the Port Authority, the Lower Manhattan Development Corporation (LMDC), the city government, and the Regional Plan Association—who extolled the importance of the process and presented the famous six schemes compiled by the LMDC and its consultants [RECORD, August 2002, page 23]. The working portion of the event was conducted by Carolyn Lukensmeyer, a professional facilitator—who, for me, combined the more annoying aspects of Oprah and Kim Il Sung. Indeed, as the meeting wore on, I increasingly felt like a delegate to a 1950s Soviet Party Congress: the Central Committee has carefully selected this list of identical candidates for your consideration (in this case, the six schemes for street grid, office, shopping, hotel, memorial, and transit complexes of precisely the same areas): You may now vote. My own strained ability to participate in well-behaved Nielson-family fashion finally evaporated when Lukensmeyer ("give yourselves a nice round of applause") embellished her script with a pep talk on how the meeting was democratic as all get-out because, "in democracy, the people have a chance to speak!" Seizing upon this right, I rose to my feet to shout, "Buuuullllshiiiit! Democracy means the people have the power to choose!"

This tiny act of insurrection went almost completely unnoticed. Inaudible over the amplified pronouncements being broadcast from the central stage, invisible in the vast hall and crowd, my outburst attracted a smattering of applause from nearby tables and not the slightest notice from anyone else. Not the first time for me, but telling nonetheless. The charade of "electronic democracy" was burst by the asymmetries of power in that room, the careful control of both agenda and process from above. Like most planning, decision-making belongs to the powerful, reaction to the people. At the Javits Center, original ideas were excluded because they—naturally—lacked a constituency: All the opinions that we wrote on our computer were vetted to see if enough people shared them to have them played back to the audience. Creativity was thus foreclosed by stifling the new or the unusual and by total control of what could be discussed. For example, there was not even the *mention* among the alleged "choices" of a scheme that would preserve the entire site as a memorial.

But something constructive nevertheless happened at the meeting and in its aftermath. This had nothing to do with changing the underlying institutional structures—the virtually unaccountable quasi-governmental agencies that are running the process—but rather in the clarity of the audience response to the uninspiring and profoundly mediocre goods on offer. Emerging from the self-congratulatory and coercive process was a genuine act of protest: the audience clearly exercised the one planning power that's left in the hands of citizens, the power to say no. Given the opportunity to vote scheme-by-scheme, the crowd offered a pox on all houses.

In July, 5,000 people attended the "Listening to the City" event at the Javits Center.

Power had certainly anticipated this. Indeed, no sooner had Beyer Blinder Belle (BBB)—the firm chosen to produce the six "alternatives"—revealed the schemes during the week preceding the big meeting than a fusillade of gunfire rained on them from every direction. Even John Whitehead, chairman and patriarch of the LMDC, mumbled with embarrassment about this being "only a beginning," at the press conference at which his misshapen offspring were first presented. Likewise, the mayor (who has recently called for the inclusion of housing on the site), the media (including Paul Goldberger, Ada Louise Huxtable, and Herbert Muschamp), and the person in the street responded with a raucous ho-hum. Even the governor (up for reelection in November and the man with the most power to influence events) came out for preserving the towers' footprints and argued for a

Contributing editor Michael Sorkin is the coeditor with Sharon Zukin of the book After the World Trade: Rethinking New York City.

design that looks beyond the limits of the site. And in the post-Enron environment, there is a growing sense that the leaders of the development community may not be the most dedicated keepers of the commonweal and that their plan simply to restore business-as-usual intolerably ignores both ethical and civic values.

The dreadful work presented in this first round was not simply a product of failed democracy, the avarice of power, and of programming that grew primarily from the imperative to make money; the design process was also conceptually flawed. Democracy, after all, has only a tenuous relationship to great art, and a vote cannot create it, only sanction it. The real problem with this (nondemocratic) process is its acceptance of one of the cherished myths of modernity—that planning is essentially a rational, objective procedure. The LMDC has offered up a model of design by deduction, based on the idea that a "correct" solution can be derived by a hard-headed look at the facts and by progressive analyses of possibilities and constraints. This allows a false distinction to be made between planning (something on which all reasonable people should be able to agree) and architecture (the fickle realm of taste). By representing the six proposals as planning (this was not architecture, we were endlessly told, despite what we could plainly see were buildings, parks, streets, and squares), the LMDC covered its ass by acting as if the most fundamental issues of form, organization, and character were simply the outgrowth of logical thinking.

THE AUDIENCE EXERCISED THE ONE PLANNING POWER LEFT IN THE HANDS OF CITIZENS: THE POWER TO SAY NO.

The mediocrity of the results so far is also attributable to the mind-set of those designers to whom this project has been entrusted. Although Alex Garvin, the head of planning for the LMDC, is knowledgeable, dedicated, and skilled, he has no track record as a friend of the imagination. Ideologically, he is squarely in the Andres Duany/New Urbanist camp, and his vision appears hemmed by his traditionalist sensibility. Moreover, every architectural firm "officially" working on the site shares this proclivity. And they are remarkably supine: No one from any of the architectural firms or official bodies involved in the process has publicly spoken out for a change in the office building program, for a more far-reaching planning process, or for a competition. All are hopelessly behind the curve of public opinion.

Real decisions continue to be made behind the scenes, without formal accountability, despite the pretense. The same impropriety characterizes the LMDC's design process and style of inclusion. BBB was allegedly chosen as the site designers through an "open" RFP and stand to make a huge fee (out of a total contract of $3 million). But to call the RFP open is like saying that Trump Plaza is open to anyone who wants to live there. The LMDC's RFP—which attracted only 15 proposals—was carefully restricted (by a requirement that each firm had worked on at least three $100 million projects) to ensure that only very large corporate offices would be eligible. At the same time the RFP was proceeding, however, three other firms were working away semiofficially without having gone through any public process at all, save favoritism. Skidmore, Owings & Merrill (SOM), Larry Silverstein's architect, was producing plans for the site. Cooper, Robertson was master planning on behalf of Brookfield Properties, owners of the World Financial Center. And Peterson/Littenberg (a very small firm that would never have qualified via the official process) was hired by the LMDC to be its "in-house" design consultants. This particular choice was presumably based on long personal association with Garvin, deriving from shared traditionalist taste and collegial days at the Yale architecture school.

In the run-up to designating the six schemes for public presentation, the LMDC looked at nine plans from BBB and two from Peterson/Littenberg, as well as at the plans commissioned by Brookfield and Silverstein. The board members then voted to select two of the BBB plans, two from Peterson/Littenberg, and one each from Cooper, Roberston and SOM. This choice caused a number of people to go ballistic, among them John Beyer who—according to the *New York Post*—went to Joseph Seymour, head of the Port Authority, to grouse about the substitution of the two developer plans in lieu of similar schemes his office had done. He also complained that the firms responsible for the plans were not being properly credited. At this point, Seymour and Lou Tomson—director of the LMDC—agreed to replace the two developer plans with the BBB versions, a move which, in turn, caused a number of members of the LMDC task force to become enraged at the high-handed violation of "the process." Arguably, though, the coup executed by Seymour and Tomson can be seen as restoring the process that, in theory, should only have qualified the plans produced by the architects "publicly" designated to do so.

By the end of July, the LMDC—barraged with criticism from all sides and losing its political backing from the mayor and the governor—itself came out in favor of opening the process to smaller firms and to offices from abroad. But there's no real reason to be confident that even this opening will be based on more than cronyism. Bromides about participation notwithstanding, it is clear that the architects with millions in public money to spend and with the sanction and public relations efforts of officialdom are working at an advantage. Other ideas simply cannot be heard.

Laptops, big screens, and facilitators: Democracy in action or Big Brother?

Perhaps it is time for a little less management and a little more democracy. One possibility is to open the process to everyone with an idea. Let us immediately have not a competition, but an open call for ideas from around the world. Let us spend some money on a wonderful exhibition. Let us give the people some authentic choices instead of an elaborate scheme for pulling the wool over everyone's eyes. Let us have the kind of real discussion that can only come from having real alternatives.

To that end, I invite anyone with a scheme to post it at the following Web site: www.not-ground-zero.org. ■

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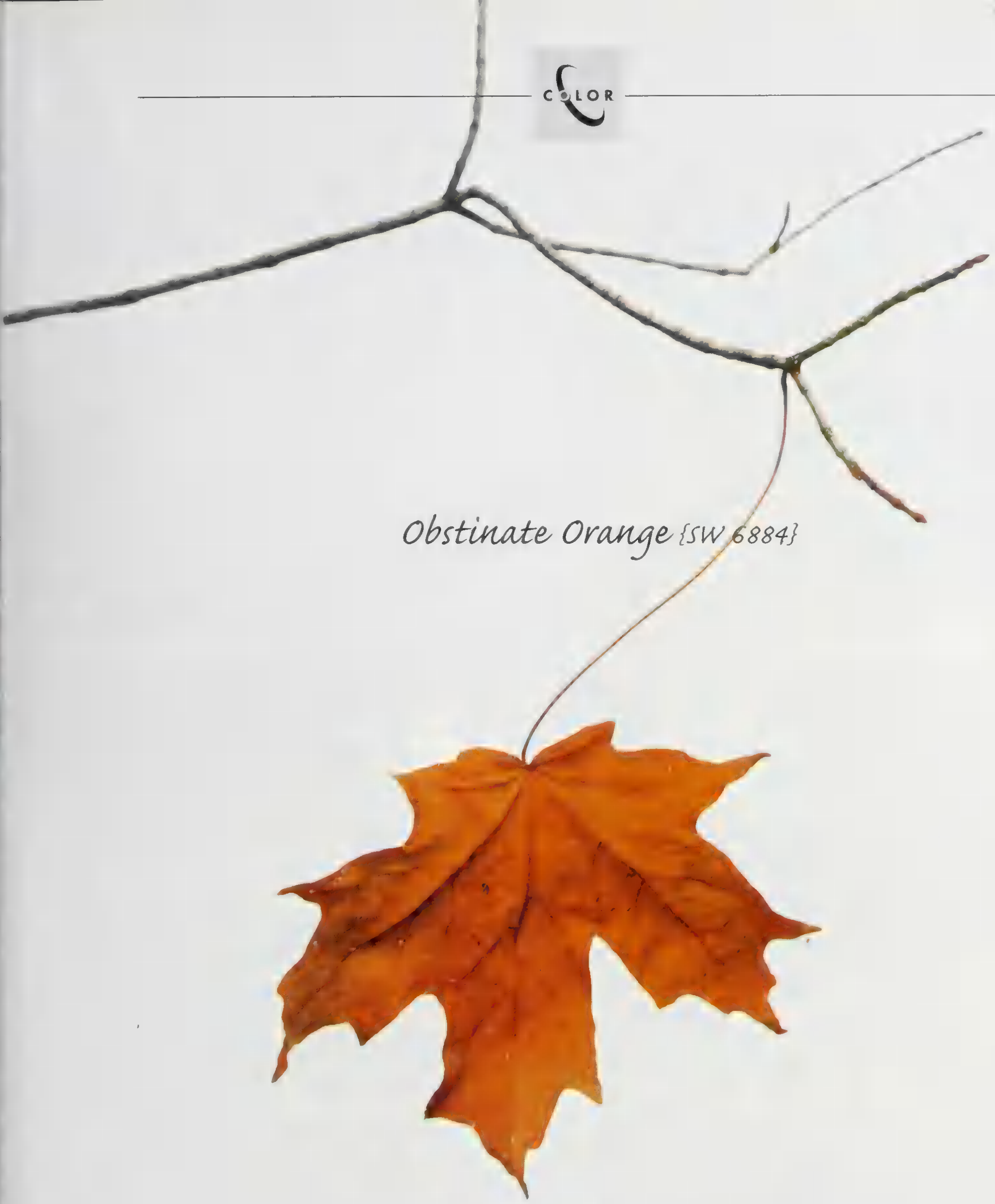

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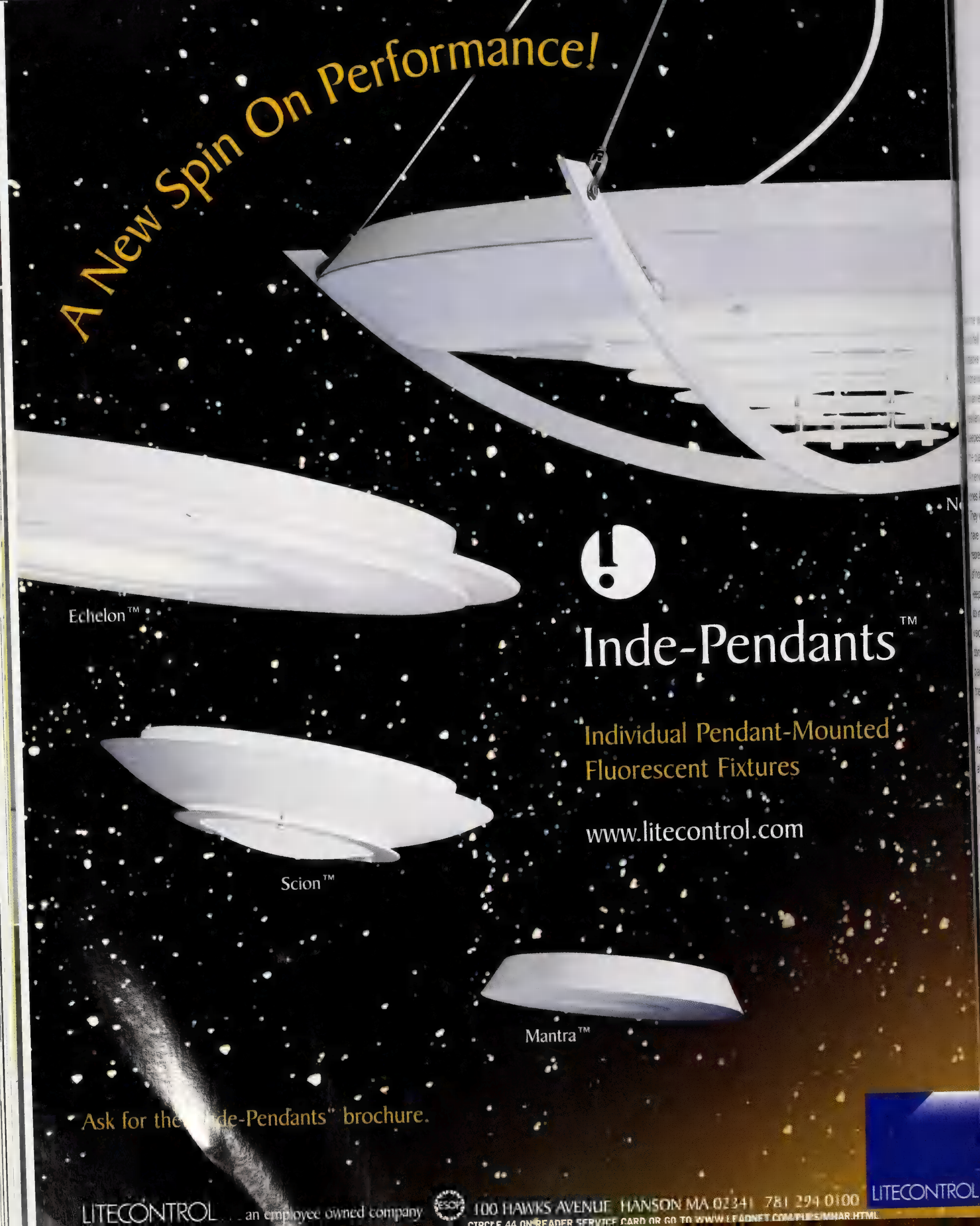
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How Ground Zero Planning Can Get Beyond Window-Dressing Democracy

Commentary

By James S. Russell, AIA

As the abundant tributes to those who fell in last September's terror attacks unfold this month, the eyes of the world will turn to Ground Zero for an expression of the nation's resilience and a portrayal of its deepest-held universal values in the plans to rebuild. They will see American values at work, but not the ones Americans are most proud of. They will see public agencies that have allowed the public to believe representations they had no intention of honoring and will hear officials that keep talking about what they can't do instead of seeking a compelling vision and finding a way to get it done. They will not see a process in place to achieve a result to match the gravity of the event.

What should have been an orderly, confidence-building process has degenerated into a sordid (but all too familiar) New York City political brawl.

The unraveling of the planning process could not have come at a worse time—in the midst of a corruption-inspired meltdown in the financial markets. The Port Authority's prediction that delay would damage recovery looked at press time to be a self-fulfilling prophecy—but not one that the Port seemed ready to take its share of the credit for. A *New York Times* report only days after the plans were unveiled described a continuing exodus of firms from Lower Manhattan. Companies expressed dismay with the rudderless redevelopment and the lack of progress on long-needed transportation improvements and other amenities that were supposed to be the focus of post–September 11 planning. Even the New York Stock Exchange—the very keystone of downtown's financial-district preeminence—floated the idea of building a satellite trading floor outside the city.

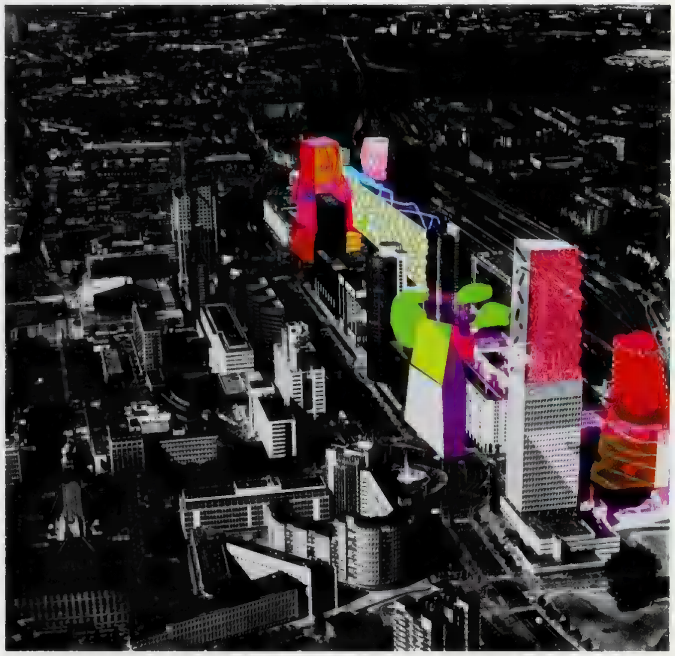
No one should underestimate the difficulties that face Ground-Zero planners. Whatever is built must unite the concerns of an enormous variety of people who have both financial and emotional stakes in the place. But creating complex, large-scale projects with a high level of public participation is no longer rare worldwide—it has simply become something of a lost art in much of America and particularly in New York.

If officials truly learn from best practices worldwide (from which the items below are culled), they could build the Lower Manhattan the city and nation deserves, and they could forge a model for other cities to emulate.

Work with information, not preconception

Planning 101 should have told Alex Garvin, head of planning for the Lower Manhattan Development Corporation (LMDC), and the Port Authority that you can't devise a development with enormous potential impact on the city without accurate information. As one observer has pointed out, "You are building for what might be 150 years!" Pushed to show progress by politicians and the press, LMDC and the Port tried to shortcut the data-collection process.

Unfortunately, neither the city nor the Port have planned strategically in the past and so had little data and no coordinated long-range plans to give the consultants as a starting point. The urban designers were forced to come up with their proposals with only the most basic understanding of the transportation possibilities or the district's urban-development potential.



A quick montage by Alsop Architects spurred public dialogue in Rotterdam.

Lacking any vision of what Lower Manhattan could be, LMDC's urban designers, Beyer Blinder Bell, fell back on generic real estate formulas. How could anything inspiring—or appealing to tenants—come out of such massive, overbearing lumps? Did anyone look at whether architecturally and environmentally innovative buildings in London, Berlin, or Frankfurt might offer lessons to a district brutalized over decades by lowest-common-denominator developer boxes? Can anyone know what to plan without comparing Lower Manhattan's economic possibilities with those of other business centers—locally, nationally, globally?

Don't solicit "input"—create dialogue

For all the lip service to openness, the LMDC has adopted an imperial "we know best" attitude about involving people with a stake in the outcome at Ground Zero. Cities that redevelop successfully recognize that people want their voices heard but also want to consider others' ideas and respect the proposals of designers and planners. (In the numerous public forums held after September 11, citizens voiced support for a number of ideas they had gleaned from the work of such expert volunteer consortia as New York New Visions.)

An "electronic town meeting" in July hastened the demise of the plans it reviewed, and has, therefore, been declared a success. It is, however, dubious as a model for public participation. It is one-way: "You, the people, tell us, the public servants, what you want." It allows politicians to hide behind such "consensus"—"I'm only doing the peoples' will"—rather than requiring them to exercise leadership or ask important questions. And, as Michael Sorkin notes (Critique, page 67), their output of boilerplate bullet points ends any dialogue based on ideas rather than starting one (see www.listeningtothecity.org).

Carefully structured dialogues on a smaller scale can engage specific interests (local businesses, the nearby Chinatown neighborhood). Consensus is important, but small workshops can "try on" a variety of ideas, even what may at first seem unlikely ones. These other discussions, stirring in real data and expert analysis and involving a wider spectrum of people and users, may reconcile the concerns raised in the earlier groups. Many cities use charrettes or other kinds of hands-on workshops to turn talk into engagement [ARCHITECTURAL RECORD, "Form Follows Process," March 2001, page 127].

Such interactive processes, when well run, usually identify key areas of agreement or consensus (even among interests nominally at odds), while highlighting the areas of greatest contention, which can then become the focus of planning and design effort.

Be a great client

Large, complex projects steeped in controversy—such as Frank Gehry's Guggenheim Museum in Bilbao; the transformation of central Barcelona; the Jubilee Line in London; Sir Norman Foster's Reichstag, in Berlin; I.M. Pei's Louvre; and Richard Meier's Getty—all owe their success to clients of vision and tenacity.

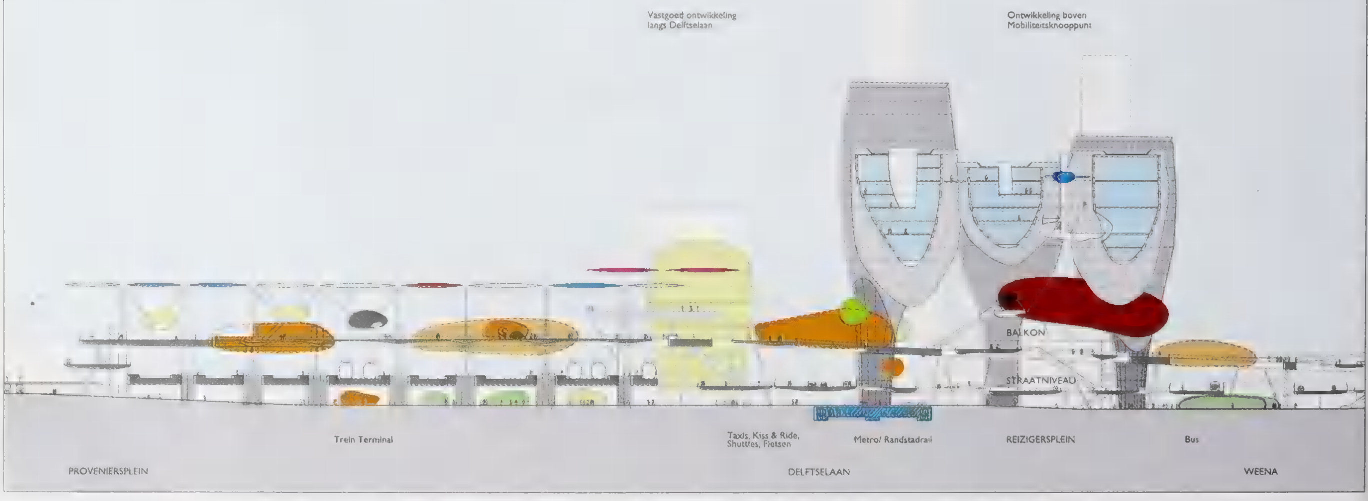
Great clients understand that highly talented architects make more than pretty shapes. These clients don't saddle their architects with the limitations they perceive at the very beginning (as the Port did in demanding the replacement of exactly the destroyed 11 million square feet), because they know that dedicated designers can often overcome limitations. Such clients are aware that a brilliant design can rally support, soften opposition, and open purse strings. They recognize how architecture can benefit a city, and they can articulate to skeptics—as well as to officials, taxpayers, and private interests who will be affected by the project or must fund it—both the owner's vision and the designer's approach.

In Lower Manhattan, the "vision thing" can't be shortcut. It must propose answers to obvious, critical questions: What kind of place should the neighborhood be in the 21st century? What would it take to keep it a world financial capital? Or should it become less of a "downtown" and more of a mixed commercial and residential neighborhood? Almost all of these questions have been asked by someone, but the LMDC has not found a way to make a compelling vision out of the answers. Its blueprint remains little more than a laundry list of ideas. The LMDC has yet to compare these ideas, to prioritize them, to consider what choosing any one of them would mean, or to engage in a real dialogue about them.

Use design proactively

Projects of enormous urbanistic and engineering complexity seem to pop up every week or so in Europe and Asia, many featuring striking architecture. But what appears to be the product of a single hand is almost always the summation of a long process that exhaustively tests ideas. A site may be developed pursuant to a government-sponsored urban-planning scheme over which is layered a district urban design. Parcels may then be handed off to developers who build from competition-winning designs. Each iteration represents a testing and critique of the previous team's work. The product of such a process may be a bland compromise or a spectacularly scintillating work of architecture, but everyone involved is assured a voice and everyone knows that numerous possibilities have been considered along the way. The design that looks like a singular, personal artistic vision may subtly incorporate numerous community-driven aspirations.

Alsop Architect's suggestive urban design drawings helped the public participate in shaping a very large and ambitious scheme for Rotterdam's Central Station.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Architecture can play a key role in such a "what if" process. Consider the mammoth replanning of Rotterdam's Central Station and the area around it. An elaborate consultation process involving citizens and business groups is typical in Holland. But throughout an 18-month planning process, Alsop Architects did not just poll the public's will, but guided a dialogue using what project director Stephen Pimbley calls a "sacrificial scheme"—a sketch design that embodied the architect's early best guesses. "It was intended to stimulate a conversation," says Pimbley. "We did not want people to feel it was finished. And they felt comfortable seeing their hopes and dreams in what we were drawing." The planning is about to enter a new stage, requiring architectural design of a large intermodal station. It will be a distinctive work, perhaps ultimately competing with Ben van Berkel's Erasmus Bridge as symbol of the city. And it is going ahead with little of the acrimony that often accompanies such large-scale change. Playful blobs, an Alsop signature, suggest a future in a planning-stage report, rather than assert what it is. At the same time, drawings and diagrams clearly present the key elements necessary to proceed.

Critics have suggested LMDC hire one great designer or sponsor an international competition [RECORD, Editorial, May 2002, page 23]. Mark Robbins, director of design at the National Endowment for the Arts, who stepped down last month, offers a more nuanced view: "I think it's unrealistic to attempt the master stroke all at once." He favors competitions, but competing teams in NEA's New Public Works program also participate in intense conversations with clients and interest groups along the way.

It would be enormously difficult to structure a competition to produce a compelling, overarching strategy. A series of competitions, involving a variety of carefully considered scenarios, would test concepts around which consensus has developed—like restoring the streets severed by the Trade Center's construction. But they could also test little-discussed ideas, like whether a suitable commemoration could be developed out of the very fabric of the redevelopment, rather than as a stand-alone memorial, as politicking has so far dictated. "You want to generate proposals that fall between the fantasy scale of 'ideas' competitions, like the one Max Protech sponsored [RECORD, March 2002, page 59]," says Robbins, "and LMDC's very stolid approach, which does not further dialogue."

No process, however good on paper, can work if people don't trust officials to take it seriously. The trust the Port and LMDC have squandered calls into question whether either agency is suited to manage so vast and complex a rebuilding. A proposal launched by city officials to arrange a land swap as a means to get the Port Authority out of the process was surprisingly well received, though such a swap will be complex and probably very expensive for the city. It's an enormous rebuke to a huge, once powerful agency that long ago ceded the regional leadership it was formed to promote. LMDC, which was created to lead the rebuilding, failed, too, and it does not deserve to continue in existence if it cannot quickly right its course, taking a leadership role with defined powers, a defined agenda, an independent mandate, and a clear commitment to serve the public. With businesses voting their lack of faith with their feet, it could not be more urgent to build trust now, and build it fast. ■

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The Party's Over: Professional Liability Insurance Premiums are Increasing Dramatically

Practice Matters

By Roger C. Brady, AIA

Virtually every architectural firm has been getting discounted professional liability insurance rates for more than a decade. Now, the rate pendulum is swinging from low to high. If you haven't experienced your increase yet, you will soon. Several factors are contributing to the current cycle of premium increases.

Changing market conditions

The property and casualty (P&C) carriers in general—and professional liability (PL) carriers in particular—are returning to their senses and trying to become profitable by doing what insurers do: They want to collect more on premiums than they pay out on claims. In the go-go 1990s, carriers wanted to keep shareholders happy by gaining market share and increasing revenues. They charged firms less than cost to get their business and to keep it. Back then, they could count on strong performance from their investment portfolios to make up underwriting shortfalls.

In those days, carriers were willing to live with combined "ratios" (claims costs plus overhead) of up to 120 percent premium revenue and higher! But the party is over. Since midyear 2000, the Dow Jones Industrial Average has lost as much as 2,000 points and insurance carriers can no longer rely on windfalls from their investment income. They must return to profitability, based on rigorous underwriting, immediately.

September 11 and reinsurers

The events of September 11, 2001, were not a major cause of the current PL premium increases, but they did not help matters any. Conservative estimates are that \$45 to \$75 billion will be paid to settle claims resulting from the events of that day. Both P&C carriers and their reinsurers have less capacity to underwrite than they did before.

Because of September 11 and other big losses, some reinsurers have fallen by the wayside. Those that remain are much more gun-shy about their potential risk, both real and imagined, related to buildings. And surplus capital—which is the basis upon which a carrier has the capacity to take on risk—has evaporated to some extent. The strongest and most reliable reinsurers, with solid assets, good liquidity, and surplus capital, are really in demand these days, and they are driving hard bargains with carriers. As the supply of reinsurers declines, prices to reinsure go up. Your insurance carrier adds these hidden costs onto your premium.

The effect of claims

Underwriters tell me that claims are up slightly. Unfortunately, the effect of the PL industry's heavy discounting of premiums for a decade is essentially the same as an increase in claims.

Claims are up in one area, and that is project insurance. This type of policy covers the entire design team, with a dedicated limit, for a specific project. Insurers have seen a marked increase in claims. Again, the effect has been exacerbated by the low premiums charged in the past. The increase in claims has occurred because clients who took on extremely risky projects bought this guaranteed coverage and all too often used it.

Future claims may also go up

If history is an indicator, the construction boom that occurred through 2000 will result in an increase in claims within the next two to four years. Architects, engineers, construction managers, and contractors all had trouble finding good people. When stressed-out management, inexperienced staff, or fast-tracking come together, the likelihood that problems will occur is increased. If your firm hasn't yet been tripped up by a claim resulting from the craziness of the recent boom, it still may.

What it means to you

You will pay more, and as your firm recovers and grows, your PL premiums will go up, maybe a lot. For firms with fewer than five employees, your PL premiums will actually exceed those for your car insurance. Traditionally, many of the smallest firms "went bare," with no coverage at all, but in the '90s, carriers decided these comprised a market that was ripe for development. Small-firm programs sprang up at the leading insurers and made money for them. But any claims against these small premiums upset the risk-reward equations the carriers had predicted, and higher premiums will be the result.

In case your broker hasn't mentioned it, if you have a medium-to-large size firm, you can expect 20 to 30 percent increases in premiums. For firms that specialize in high-risk work, or have had a claim in recent years, good luck; increases of 50 percent are common. If your agent gets multiple quotes from first- and second-tier providers, there will likely be a "low bidder," in spite of the hard market—although some carriers appear to be playing by different rules. Regardless of this, you should still make your decision based upon the quality of the insurance carriers and products available.

Another change is that you will get less. Previously, carriers would lock in either a premium or a firm's rate per \$1,000 in fees, for up to three years. In this marketplace, that kind of deal is only available to the smallest, lowest-risk firms.

The "first-dollar defense," where the insurer pays what would normally be your deductible, is a thing of the past. It's too expensive to insure this risk, because on an actuarial basis it's almost a sure claim. The "shared deductible," where the insurer might pay, say, either 80 percent of your deductible or your cost of defense, is endangered. Some carriers are moving away from this endorsement, though others think it is still okay. Project insurance is gone, going, or available only on less favorable terms.

Roger C. Brady, AIA, offers risk- and practice-management consulting services to design firms. Reach him at roger@onlinestrategicsolutions.com.

Out of business

When the market gets tough, the Johnny-come-lately carriers drop out. In the 1990s, P&C carriers jumped into the PL game offering copycat policy language and lower prices. They will be the first to go. Yesterday's bargain will be tomorrow's nonrenewal notice. Guy LeVan, director of national industry relations with DPIC Companies, in Monterey, California, says, "Select a carrier who has weathered the market over the long haul and stuck with the design community through thick and thin. There have already been carriers exiting today's market."

IF YOUR FIRM SHOWS IT IS COMMITTED TO A RISK-MANAGEMENT PROGRAM, ITS INSURANCE COSTS WILL BE DECREASED.

The remaining carriers are reducing their risk portfolios. They will decide which firms to insure and how much they will charge based on the litigiousness of the state where the firm does business, its size and project types, and the number of claims it has had. A knowledgeable broker will know the particulars and each carrier's preferences. The name-brand carriers will compete for business in all the same markets. But in order for them to become profitable again, they will likely drop the 10 to 30 percent of firms they perceive are the most problematic, risky, or costly to the carrier, or else charge them big premium increases. Alternative carriers, when presented with these "damaged goods" firms, may not like what they see either. Everyone is pushing for better underwriting profitability, and recent claims history is a "key indicator" for any carrier, as is firm involvement in certain project types, especially condos and convention centers.

The bottom line is that the products offered by the better carriers will be in demand, with only a limited supply of excess capacity and reinsurance flexibility.

There are solutions

There are many proactive steps you can take that will help you gain control of risks and protect your profits from being consumed by premium increases. Here are some simple ones.

Managing principals must reconnect to PL issues. The office manager or accountant can do some work, but a principal's involvement is more important as a symbol of commitment toward PL issues in the eyes of a broker and carrier.

Relationships are key. Yours with your broker is extremely important in getting and keeping coverage, and often your broker's relationship to your carrier is also key. Some carriers have exclusive relationships with brokers they trust. Other carriers are more open, but they are still less inclined to give a new or "non-expert" broker the time of day, much less a good quote.

Of course, your choice of carriers is important. Some have been there forever, and some of the newer ones say they are committed to the profession and intend to stay in business. Some carriers offer more risk-management services than others, better claims handling, and the policies they write may be better—the fine print really does matter.

Increase your deductibles. This is risky business, depending on your firm's ability to pay. If you can come up with more of the first-dollar defense and damage costs, you will reduce the carrier's risk and lower your premium. If

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you've been profitable and have some liquid assets—old accounts receivable don't count—you may in fact be able to increase your potential out-of-pocket expense for a claim by 50 to 100 percent. If not, get ready for an increase.

IN THE CURRENT INSURANCE ENVIRONMENT, YOU NEED TO PRACTICE WITH ALL ASPECTS OF RISK IN MIND.

Decrease the limits of your coverage. The decision to do this must be discussed with your broker and your partners. To calculate the risks, you must consider who your clients are and what expectations they have; what kinds of projects your firm does, and their size; project delivery method; the value of your practice; and what your competition typically carries. The most difficult variable to adjust is what your carriers are willing to offer. The norm for the architecture and engineering professions seems to be a $1 million limit, with more than 75 percent of firms at that level.

Save for a rainy day. When it is time to renew, you can count on your rates and premium going up by a minimum of 15 to 30 percent if your firm is "clean as a whistle" and your fees have not increased. If your firm has some red marks for claims frequency or severity, claim reserves set aside of $25,000 or higher, risky project types, dramatic growth in fees, or management or ownership changes, increases of 20 to 50 percent and higher are common.

Make PL a reimbursable expense. Consider charging your client for increased coverage limits that exceed your basic policy coverage. For example, a client wants a $2 million limit on a project, but your practice policy is only $1 million. You can get increased coverage for that project for a discreet price. You can pass that cost onto your client. Be sure to address not only the first year, but also the next several years when a claim is more likely to occur.

Make risk management a top priority. Even upstanding firms with solid PL applications occasionally have claims. If your firm goes out of its way to document that it is committed to improving its risk-management techniques and can document its successes, this can only help with its insurance costs.

How do you convince your insurance company? Consider an AIA/ACEC organizational peer review. These are facilitated by the national components of each organization. A firm's willingness to go through the process says a lot about its commitment to loss prevention. Some insurers offer a premium credit for this in-depth look at your firm. Alternatively, you can also employ a consulting firm that focuses on risk-management issues, or do it yourself. The important thing is to dig below the surface of your operational structure and really take objective stock of your practice.

Regardless of how you identify your "blind spots," it will put your firm in a better light if you demonstrate you have implemented measures to improve the negative aspects of your risk profile before your policy is up for renewal. It's important to start early. Underwriters want to know you have done the right things—not that you intend to do them.

In the current insurance environment, you can't afford not to take these steps, but optimizing your PL insurance premiums shouldn't be the only goal you have in mind. Practicing with all aspects of risk in mind is just a good way to manage an office. ■

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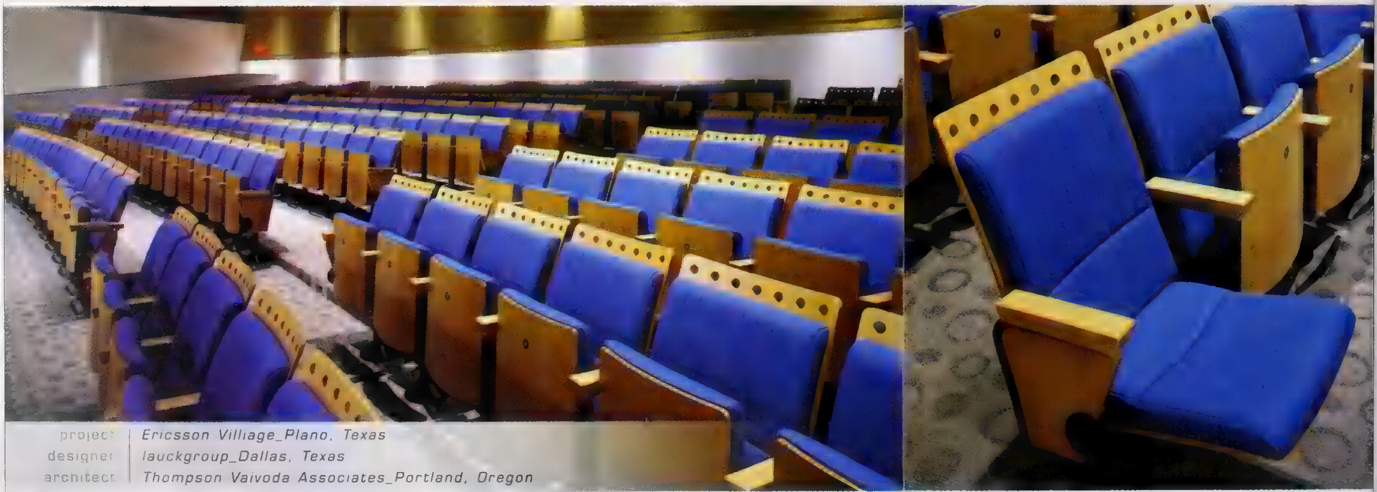
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Is the pen mightier than the mouse? Helmut Jacoby's drawings make a strong case

Exhibitions

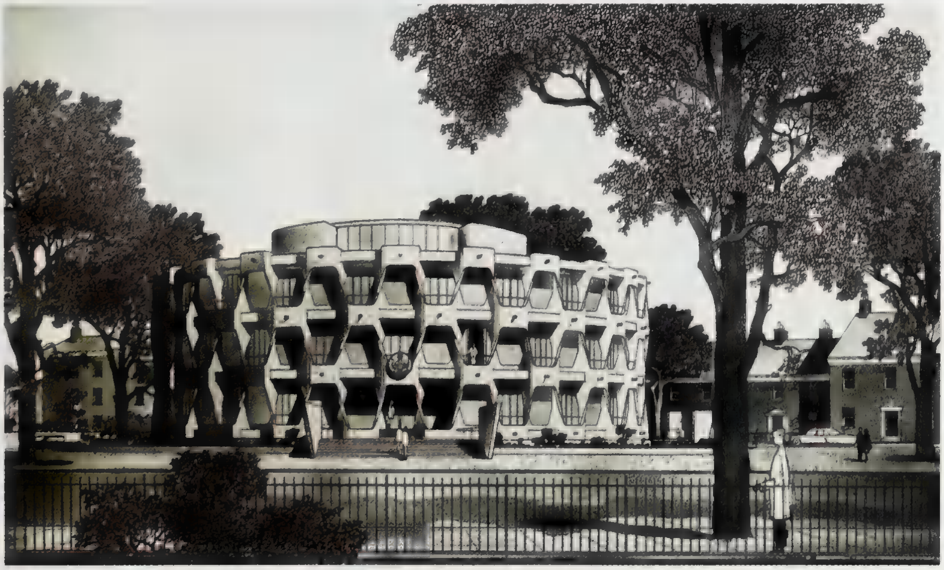
By Clifford A. Pearson

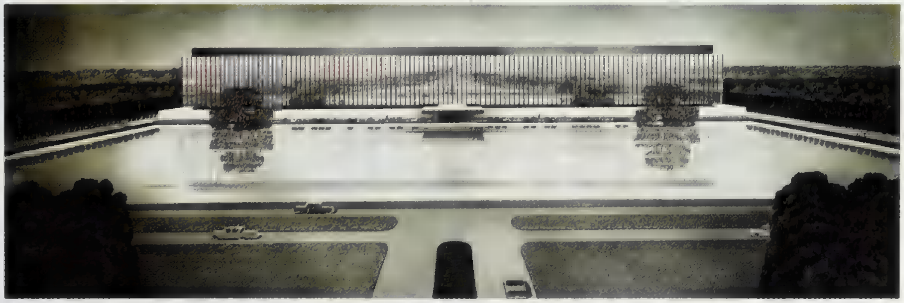
elmut Jacoby: Master of rchitectural Drawing. *The Art stitute of Chicago, August 1–October 27, 2002. Curated by ohn Zukowsky.*

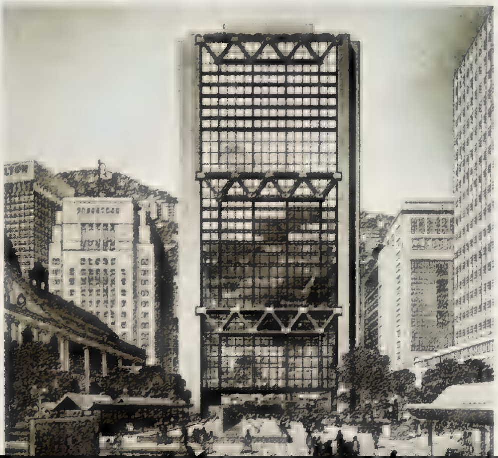
ow that the computer has largely aken over the world of architectural endering, putting together an xhibition of exquisite, handcrafted rawings might seem perverse. ut, in fact, the timing of this show ouldn't be better. We have seen the uture and can now truly appreciate he past. Hand-inked, hand-colored rawings grab our attention as never efore. Once common, now rare, they ave assumed a deeper meaning, nged with shades of nostalgia and he lure of a disappearing tradition.

In the 1960s and '70s, Helmut acoby was the king of architectural enderers, commissioned by the top rchitects in the world to turn their esigns into memorable images. At rchitectural schools, students ried their damnedest to draw like acoby. A native of Germany trained t Harvard's Graduate School of Design in the 1950s, when Walter Gropius was in charge, Jacoby soon ocused on his talent for architec-ural perspectives and caught the eye of Philip Johnson.

While freelance renderers were are in Europe at the time, Jacoby was kept busy by American architects such as Johnson, I.M. Pei, Eero Saarinen, Paul Rudolph, Kevin Roche, and Skidmore, Owings & Merrill, who valued his drawings as important elements of their competition entries, as presentation documents, and as study tools.





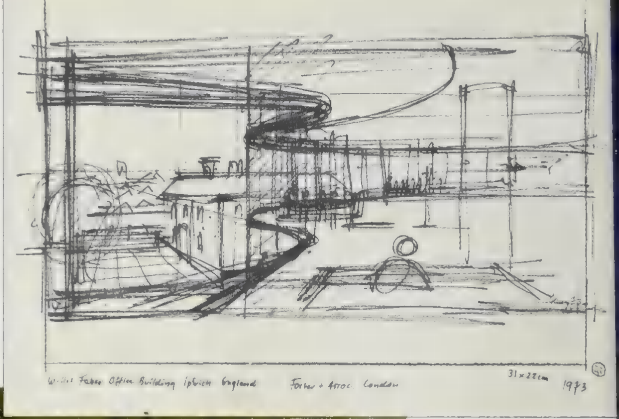


Jacoby captured the swagger of postwar Modernism in drawings of John Johansen's U.S. Embassy in Dublin (top) and Eero Saarinen's Bell Labs in Molmdel, N.J. (above). In 1985, he created the rendering of Norman Foster's competition-winning entry for the Hong Kong and Shanghai Bank Headquarters (left).

Using ink lines and ink spray, he would add shadows and tones just where they were needed. His precision and ability to capture architectural detail helped communicate his clients' intentions to professionals and laypeople alike.

In 1968, Jacoby returned to Germany and began attracting an international clientele that included Norman Foster, Günter Behnisch, and Ove Arup. He remains active today, drawing and lecturing.

The exhibition presents more than 100 original drawings, ranging from a crisp street view of Johnson's extension of the Museum of Modern Art in New York (1956) to evocative sketches of a transit station in Stuttgart by Ingenhoven, Overdieck & Partner (1998). In addition to their remarkable level of detail, Jacoby's drawings impress us with their unfailing ability to place buildings in their physical and human contexts. ■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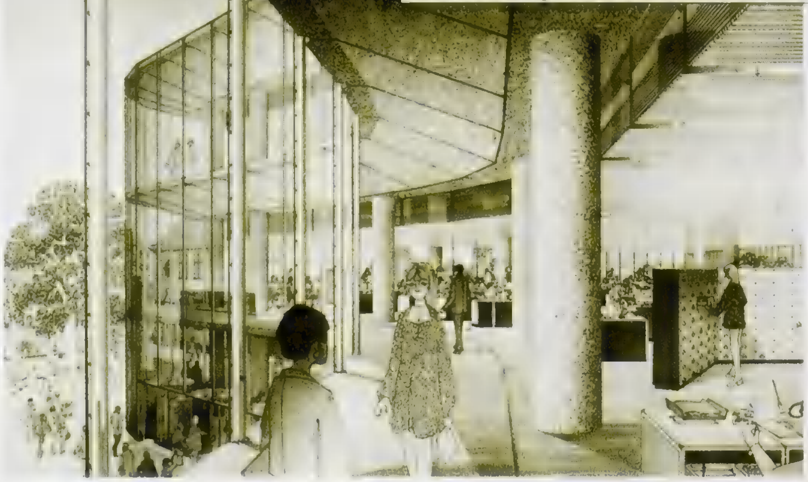
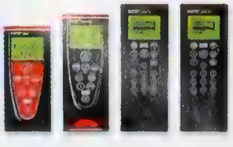


A sketch of Foster's Willis Faber Building in Ipswich, England, (right) and a final rendering of the project (below) show Jacoby's drawing process.



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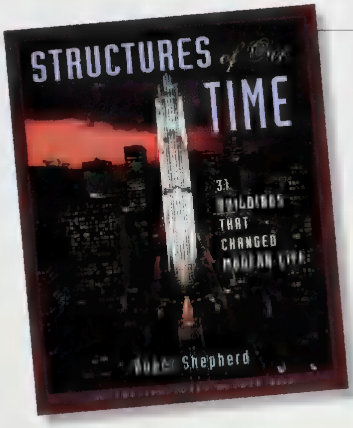
Architecture's greatest hits—from Kahn to Greg Lynn, from Bangladesh to Wyoming

Books



Structures of Our Time: 31 Buildings that Changed Modern Life, *by Roger Shepherd. New York: McGraw-Hill (an Architectural Record Book), 2002, 244 pages, $45.*

Building a book around the winners of a particular awards program is rarely a good idea. The result is almost always formulaic, repetitive: And the next winner is … Yawn.

Structures of Our Time is a delightful exception. Ostensibly a collection of the 31 winners of the American Institute of Architects' annual 25 Year Award, the book is really a quirky, episodic look at Modern architecture from 1930 to 1970 (the period from which the featured buildings date). The person doing the looking is Roger Shepherd, who teaches at the Parsons School of Design in New York City and designed ARCHITECTURAL RECORD's Web site.

As Shepherd admits in his introduction, "The spaces between 31 buildings as disparate as these are vast indeed." Shepherd fills these gaps with a fascinating array of sidebars on, for instance, Le Corbusier's famous book *Vers Une Architecture*, Lewis Mumford's writings, iconic films such as *Metropolis* and *Things to Come*, women at the Cranbrook Academy, and projects like the Pan Am Building that haven't won any awards lately. He shows us film stills, magazine covers, cartoons, sketches, and museum catalogues, in addition to the expected photographs of buildings.

Shepherd, who designed the book himself, presents several layers of information on nearly every page: a running text, a vertical sidebar, and photo captions. The feel of the book is packed, sometimes a bit crowded. But it's lots of fun to skip from the story of Kahn's Yale University Art Gallery to an aside on Bucky Fuller's use of geometry, or to detour from Eero Saarinen's Dulles Airport to Alvar Aalto's Finnish Pavilion at the 1939 World's Fair. Occasionally, these side trips seem a little forced or arbitrary (gotta mention Adolph Loos and CIAM), but they show an impressive level of research (quotes from Wright on Mies facing ones from Mies on Wright, or a photo of Michelangelo's stair to the Medici Library in Florence above one of Kahn's stair at the Philips Exeter Academy Library in New Hampshire).

The cumulative effect of all this material is to wipe away any institutional flavor to the presentation of 31 award winners. Shepherd wisely steered clear of the awards program's structure (one year's winner followed by the next year's) and organized the buildings into eight themes: Rockefeller Center and Clarence Stein's Baldwin Hills Village, for example, fit into a chapter on "The Garden in the City"; and Belluschi's Equitable Savings and Loan, Mies's 860-880 Lake Shore Drive, Bunshaft's Lever House, and Mies's Seagram Building share a section called "A Sense of Proportion." What could have been simply a "greatest hits" collection of buildings has been cleverly shaped into one man's view of modern architecture and the culture that surrounds it. *Clifford A. Pearson*

Louis Kahn, *by Joseph Rykwert, photographs by Roberto Schezen. New York: Abrams, 2001, 217 pages, $75.*

Imagine a Muslim nation today asking a Jew to design a great public building. That happened in 1962 when Bangladesh, soon to break away from Pakistan, selected Louis Kahn as architect of its capitol in Dhaka. The 16-sided building wasn't finished until 1983, when the young nation posthumously honored the Philadelphia architect.

Kahn was known as many things: the rumpled mystic who rambled about light, space, and stone; the teacher who inspired a generation; and the perfectionist professional whose first important building, the Yale University Art Gallery, wasn't completed until 1953, when he was 52. Kahn was also known for two then-radical and practical notions. One was that any building must be rooted in its "materiality," writes Joseph Rykwert in this book about the architect; the other was that a building must concern itself with the "anatomy of society," and therefore with its institutions. Indeed, Kahn's most important works were public buildings—synagogues, churches, educational buildings, and museums—many for his home city of Philadelphia.

Other scholars have accepted the premise put forth by Vincent Scully in 1962, in the first book written about Kahn, that Kahn found his way only after discovering Roman ruins during a stay at the American Academy in Rome in the early '50s. But Rykwert places Kahn more squarely within a forward-looking modern tradition. In Kahn's view, Rykwert writes, Le Corbusier was the one figure who seemed to tower over Kahn's own time, and he would constantly ask himself, Ed Kochlike, " 'How am I doin', Corbusier?' " Not that Rykwert denies Kahn's attachment to the past.

A major biography of Louis Kahn has yet to be written.

Rykwert's analysis, published to coincide with the 100th anniversary of Kahn's birth, is, at best, an introduction to Kahn and his work. The quality of the photography is nothing to write home about, but Rykwert's concise text hits the high points of Kahn's career and puts a new spin on his contribution.
Andrea Oppenheimer Dean

New Organic Architecture: The Breaking Wave, *by David Pearson. Berkeley: University of California Press, 2001, 224 pages, $35.*

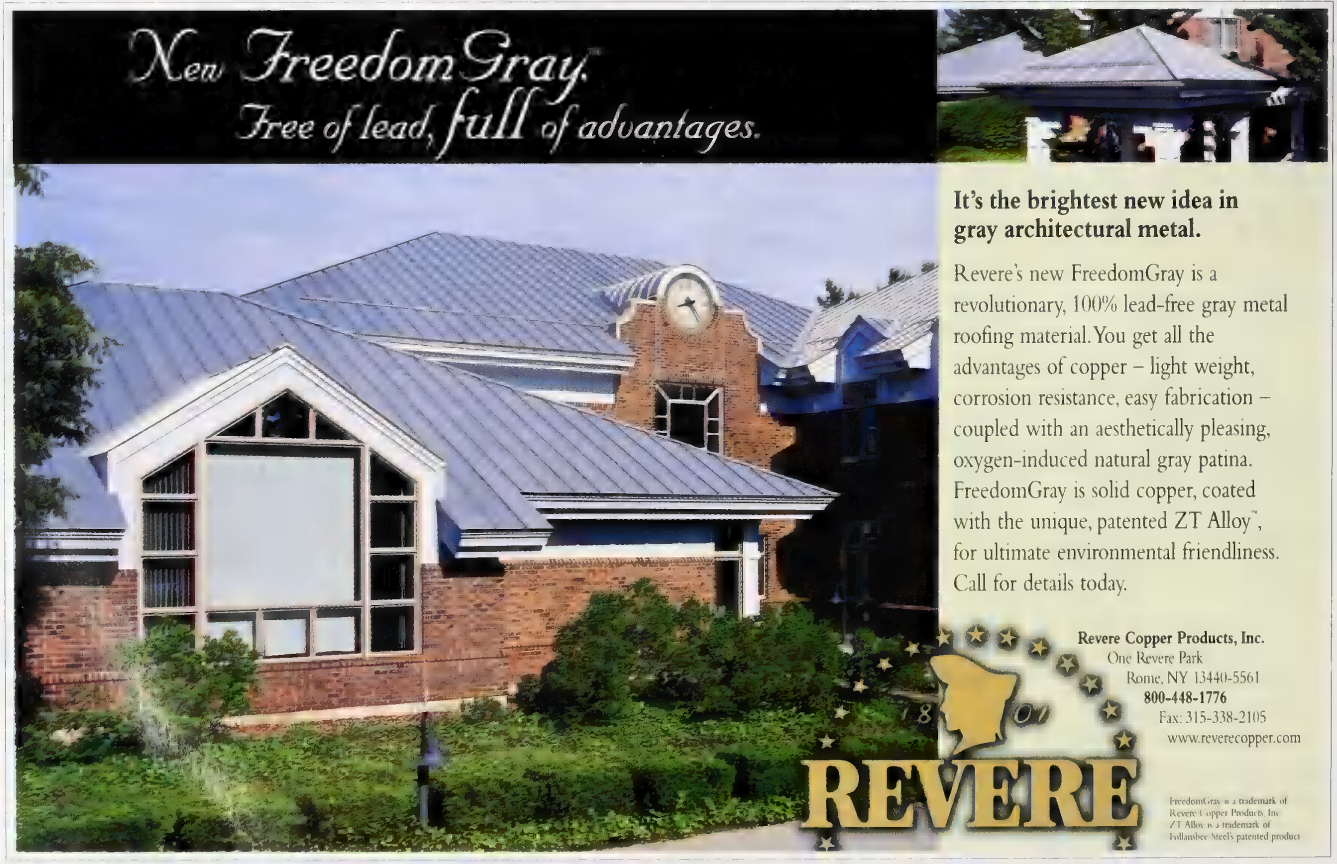
I have a soft spot for off-beat, expressive architecture whose design is attuned to nature and made of natural materials. It's often called organic architecture. Among its adherents are Frank Lloyd Wright, Bruce Goff, Bart Prince, Herb Green, and the Finnish architect Reima Pietila. And before them came Louis Sullivan, Antoni Gaudí, and the Austrian Rudolf Steiner.

It is to David Pearson's credit that he recognizes organic architecture as "not a unified movement but … diverse, perverse, contradictory, and mercurial." But like many others, he endows it with touchy-feely, spiritual meaning and claims for it roots "in a passion for life, nature, and natural forms," as though other forms of expression are less firmly anchored in a love of life and nature. He says that in a well-designed organic building, we feel better and freer, implying that the same can't be said for all beautifully designed buildings. In conclusion, he makes the highly doubtful proclamation that organic architecture is becoming less a fringe style than a mainstream design trend. But Pearson has delivered a visually lovely book. It briefly reviews the roots of organic architecture and the work of architects from 15 countries, each of whom writes a few words about his or her own work. *AOD*

All American: Innovation in American Architecture, *by Brian Carter and Annette LeCuyer. New York: Thames & Hudson (distributed by W.W. Norton), 2002, 256 pages, $40 hardcover.*

About the time Henry Ford automated the assembly line, American architecture hitched its star to industrialization and U.S. Modernism was launched. In simplified form, that's how British authors Brian Carter and Annette LeCuyer see it. And in the recently revived symbiosis between architecture and industry—this time in the form of digital technology—they see redemption for contemporary architecture, which they characterize as "commodified," homogenized, anonymous, overly specialized, conservative, and risk-averse. Digital technology, the authors believe, is "rekindling an optimism and interest in innovation." It is allowing small practitioners to work with increasing sophistication and efficiency at large scale; it is eliminating the separation of design and fabrication; and, by allowing mass customization, it is renewing interest in craft.

The book presents the work of 20 architects who, rather than relying on ready-made, generic catalogue components, are incorporating industrial and commercial innovations to develop new building forms, materials, and production processes, while pushing traditional construction methods to new limits. Among the 20 are Greg Lynn, Diller & Scofidio, Kennedy & Violich, Charles Rose



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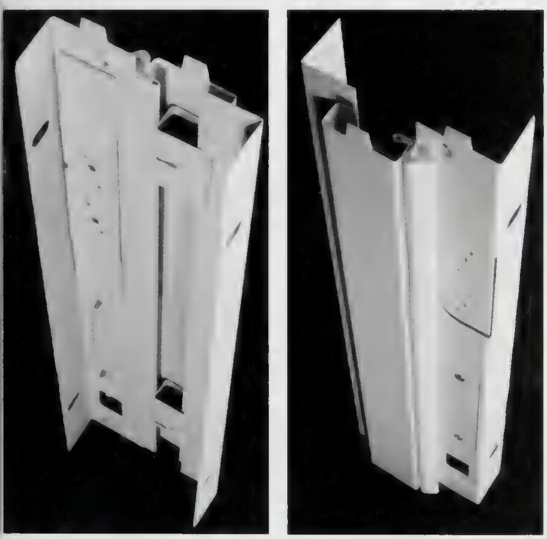

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(formerly of Thompson and Rose), Leslie Gill, SHoP/Sharples Holden Pasquarelli, and Kuth/Ranieri. The architects are organized loosely by region—an arbitrary framework, since the authors don't discuss regional differences, and one that fails to sort or highlight emerging design inventions and directions and their variations. The book's design reinforces the somewhat arbitrary organization: Pages are tightly packed with beautiful photographs and undifferentiated text with small type. It gives the volume the feel of a picture book, albeit a handsome and useful one. *AOD*

The Look of Architecture, *by Witold Rybczynski, New York: The New York Public Library/Oxford University Press: 2002, 20 pages, $18 (hardcover), $10 (paper).*

Like Franklin Roosevelt's fireside chats during the 1930s, the tone of this small volume is casual and descriptive. It affects a genial familiarity and touches the surface of many things, while only occasionally straying into weightier subject matter. Rybczynski guides the reader on a meandering journey through the advent and what he deems the collapse of Modernism. Along the way, he strolls past buildings that range from Furness's library for the University of Pennsylvania and Mies's Tugendhat House in Czechoslovakia to the Vanna Venturi House in Philadelphia and the Guggenheim in Bilbao, with a substantial detour past New York's Bryant Park.

But, like presidential fireside chats, Rybczynski's parochial tone serves to front a political agenda. It favors the traditional and conservative, the marbled rather than the Modernist.

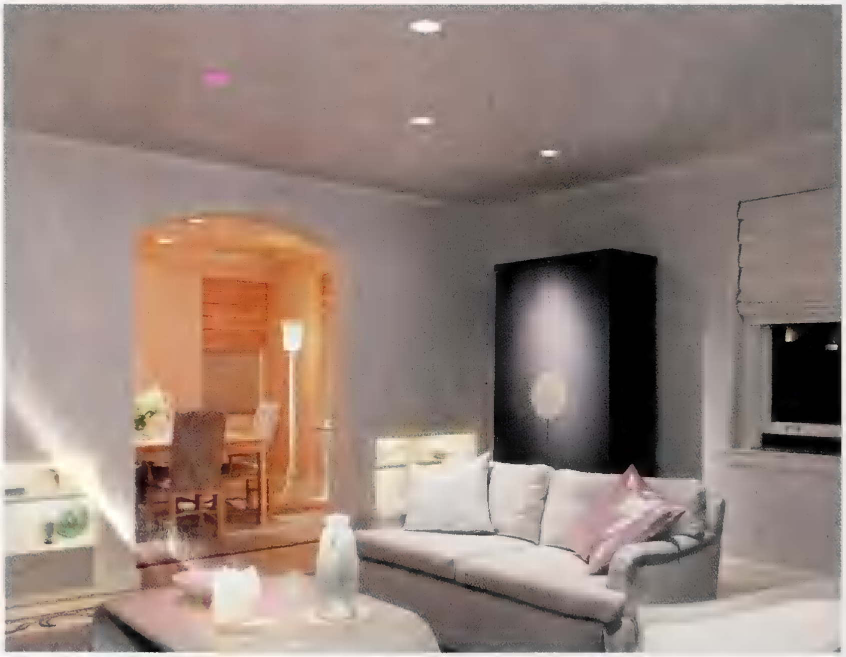
Although the book focuses on the question of style in architecture, it is unclear about what constitutes a style. The author accepts style as the antithesis to fleeting fashion and agrees with Chanel's well-worn dictum that fashion passes, style remains. He cites J.F. Blondel's statement that style in the organization of facades and in the decoration of rooms is the poetry of architecture.

True enough, architecture cannot escape being labeled fashionable or stylish, and Rybczynski is justified in castigating architects for their reluctance to acknowledge the significance of style. But to argue that the seasonal creations of sartorial fashion exert a substantial influence on contemporary building construction seems curious indeed. Architects have their own history to plunder, as is amply demonstrated by many of the Postmodernist houses discussed in the book. They do not need to turn to fashions in wallpaper, tapestry, or garments for quotation.

Despite its stated objective, Rybczynski's thesis does not actually challenge the historiography of changing appearance in architecture. It merely describes the changes and equates Modernist buildings with fashionable ones. The International Style is consistently equated with passing trends, reinforcing the traditional public preference for narratives and decoration in architecture and its related critique of abstraction.

The populist tone of a fireside chat has its place when addressing cultural issues. However, the discussion has to leave the cozy confines of the den and engage with the social and political ramifications of constant change in modernity if it wants to investigate how we should view the "look" of architecture and its underpinnings. *Ulrich Lehmann*

When a hole in your ceiling is *a good thing.*



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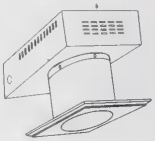

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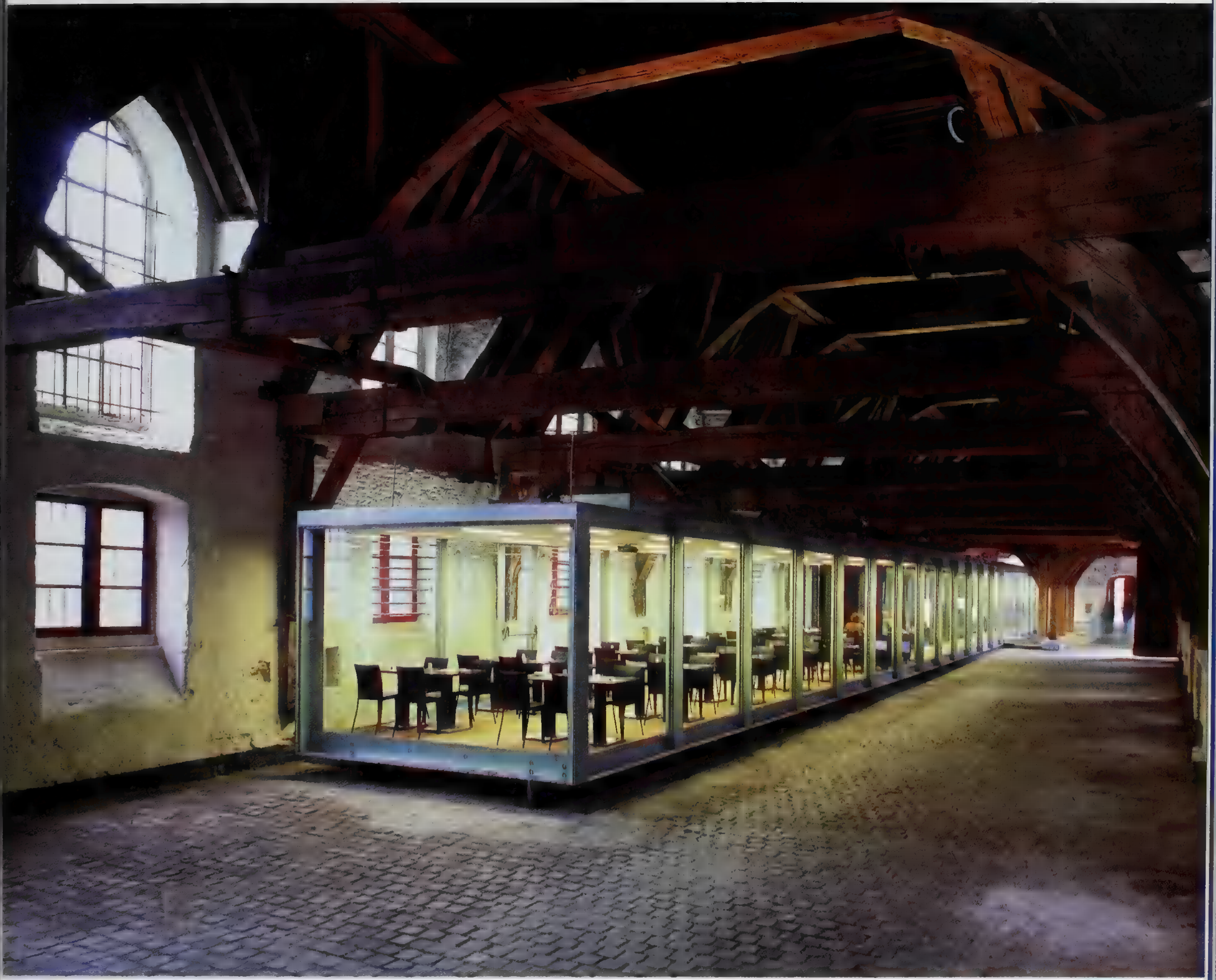
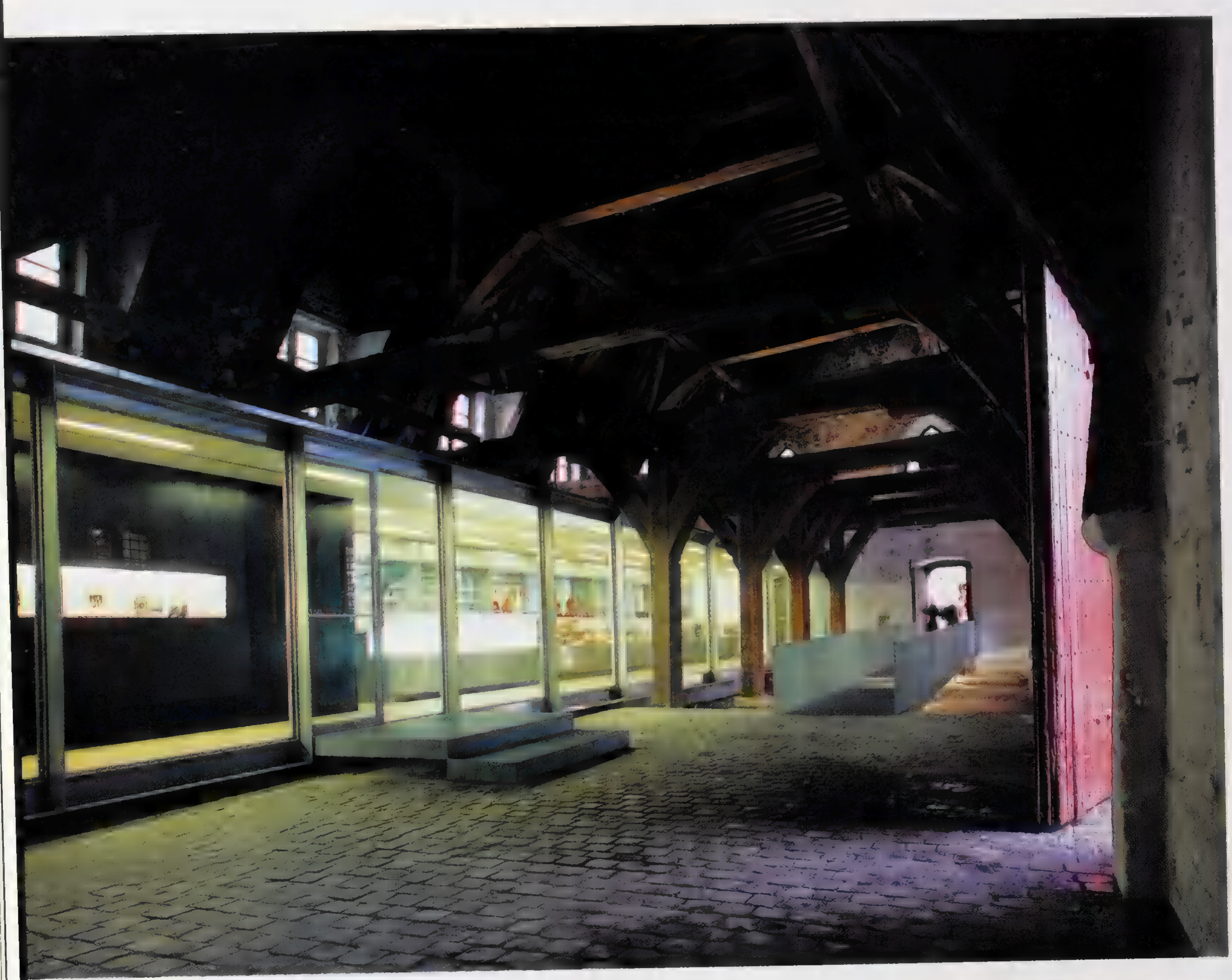


By Ingrid Whitehead

Modern hovers within medieval in historic Ghent

Where can you go when you're craving *gentse stoverij*? If you're in Ghent, in Belgium's province of East Flanders, you can find the Flemish beef stew, made with beer, at the Groot Vleeshuis, or Great Meat Hall—home of the Center for the Promotion of Products from East Flanders—designed by the firm Coussee & Goris Architects. Partners Klaas Goris and Ralf Coussee have created a place where dishes and products typical of the region can be tasted and purchased, in a contemporary structure as different from it's medieval site as *waterzooi van riviervis* (made with fish) is from *waterzooi van kip* (made with a chicken base). Yet, like the two Flemish dishes, the modern structure and it's ancient site both fit perfectly into the urban fabric of Ghent.

According to Goris, a contemporary design like that of the Vleeshuis would not have been built in Ghent some years ago. "The city has undergone a real change," he says. "In the past decade, Ghent has become a prototype for cultural investigation in Belgium." Goris points to the flamboyant Jan Hoet, curator of the new Museum of Contemporary



**The Groot Vleesh
often serves as a
starting point for
guided tours of th
city, inspired by th
architectural dial
between the new
galvanized steel a
glass volume and
medieval hall with
impressive woode
roof beams. The s
which is accessed
an entrance lobby
consists of a long
counter that displa
products (left). A w
catwalk in galvani
steel (below) that
to the new structu
spans the old buil
like a bridge and
accentuates the le
of the hall.**

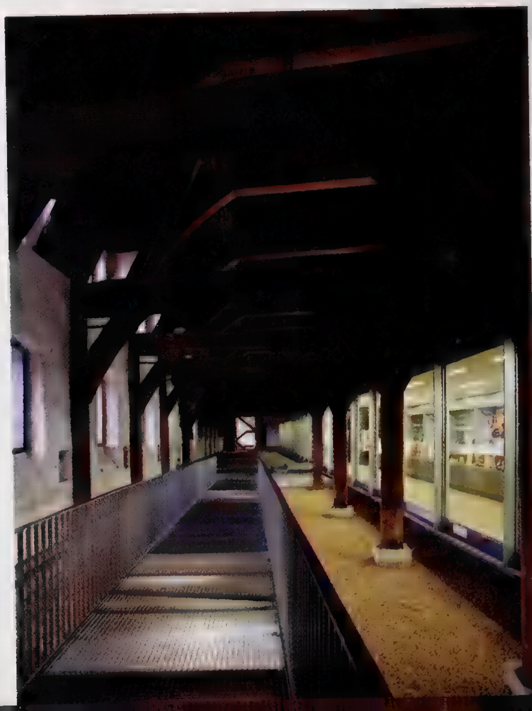
Art (SMAK), as one of the leaders of the effort to innovate. When Hoet sponsored a competition for a cultural forum building in Ghent's historic center, it yielded a shortlist of designs from such international luminaries as Rem Koolhaas, Toyo Ito, Claus & Kaan, and Samyn and Partners.

The new Groot Vleeshuis is a classic example of a contemporary structure giving new life to an ancient site while respecting the original. The site, a 15th-century *vleeshuis*, was an indoor meat market during the Middle Ages, evidenced by the massive wooden beams once used for hanging meat.

The new pavilion comprises several zones: a shop and bar, a service zone with a kitchen, a storeroom, a small office, and a tasting area with tables and chairs to accommodate 70 people. The structure has a steel frame and floors of oak plank. Spotlights illuminate the historic walls outside the boxlike enclosure.

To avoid disturbing archaeological remains in the soil, the new pavilion's foundations are two steel girders that go no deeper than 50 cm. The structure appears to hover above the original floor.

Locals and tourists alike use the center as a place to enjoy two of Belgium's pastimes that remain as heralded today as they did in medieval times: eating and drinking. ■



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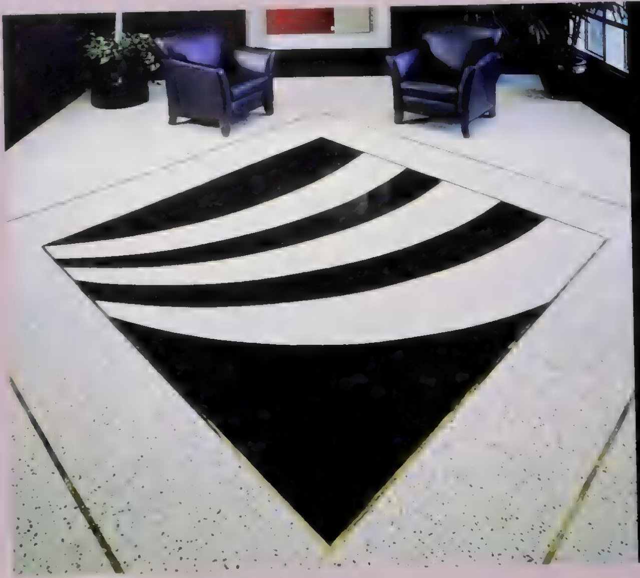


National Terrazzo & Mosaic Association
2001 Honor Award

SpectraSite
Cary, North Carolina

Architect
Alliance Architecture
Durham, North Carolina

The floor at SpectraSite was designed to be a dynamic pattern that tied both entrances of the building together. The designers wanted to introduce both color and pattern into the design. The existing slab was in place with elevator stops set. The use of the thin set epoxy terrazzo was an ideal material as it solved all the design and technical problems.
SpectraSite's logo was easily installed in the main lobby with a combination of black and white terrazzo. the overall effect of the design and material yields a rich and timeless expression of a dynamic leading edge company.

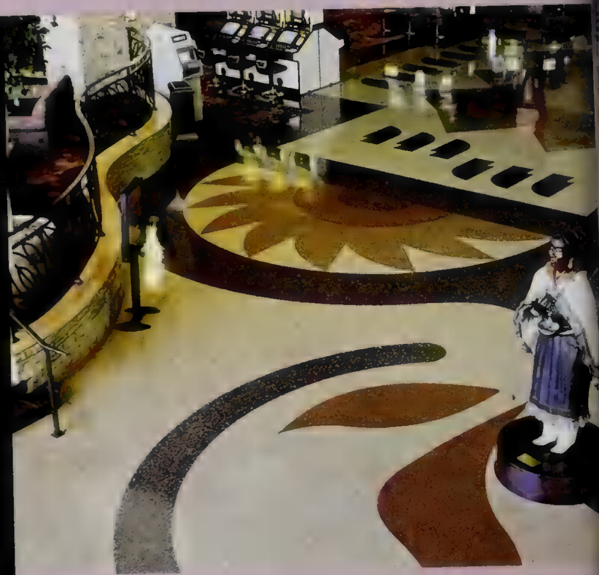
National Terrazzo & Mosaic Association
2001 Honor Award

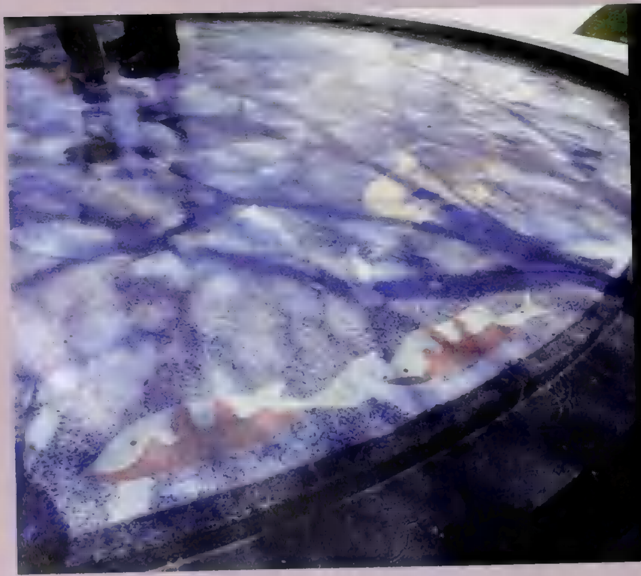
Pueblo Sandia Casino
Albuquerque, New Mexico

Architect
Leo A. Daly Arch., Phoenix, Arizona

Designer/Artist
Leo A. Daly Arch., Phoenix, Arizona

The Pueblo Indians of New Mexico wanted their casino to include flooring with designs of the Sandia tribe. The only hard surface material that could be used, and be cost affective, was epoxy terrazzo. Five colors were chosen, with 47 different designs throughout the casino, depicting life, death, health, immortality, and the heritage of the Pueblo Indians





National Terrazzo & Mosaic Association
2001 Honor Award

Shedd Aquarium "Man with Fish" Fountain
Chicago, Illinois

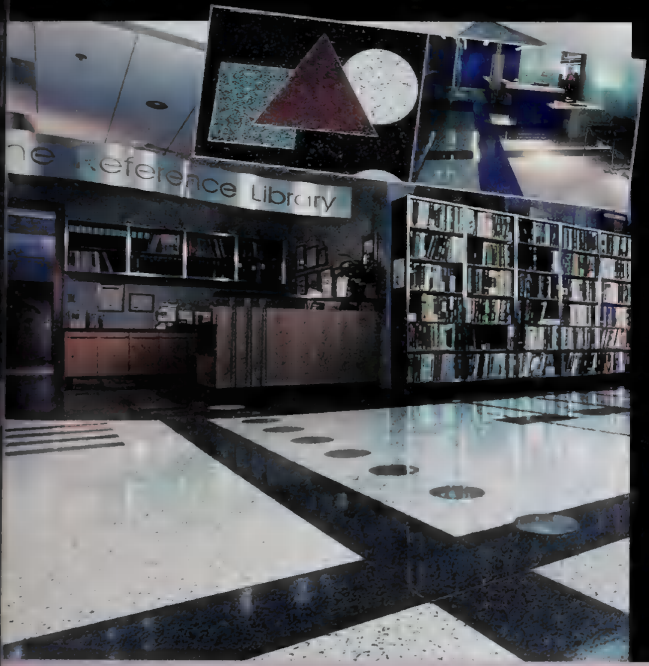
Architect
EHDD Architecture, Chicago, Illinois

Designer/Artist
Stephan Balkenhol, Meisenthal, France

The 850 square foot dome-shaped platform for the statue contains 23 sea creatures executed in 38 colors with shading variations. The creature colors as well as the ocean colors were all blended-in without the use of divider strips. Divider strips were used as outlines only. The dome shape presented many interesting problems for the grinding and polishing process.
The artist chose terrazzo because he wanted to be able to produce a completely free flowing feel for his fountain design.

National Terrazzo & Mosaic Association 2001 Honor Award

The Reference Library Phoenix, Arizona



Architect

Architectural Resource Team, Inc.
Phoenix, Arizona

Designer/Artist

James Trahan, AIA
Phoenix, Arizona

Renovating a 50-year-old building always has its share of challenges. The relocation of the architectural, construction, and reference library offices proved no different. Through extensive demolition of the existing suites, it was discovered that there were four separate flooring levels and materials.

The flooring solution was terrazzo. No other flooring material offered the design capabilities of terrazzo!

Although there are three companies collaborating in the same space, individual company identity was important in the design. Separate entries were designed to enhance this "identity", with the flooring material uniting the overall design concept.

The entry to the Architectural / Construction Company was defined with an abstraction of its company logo and colors. Black, white, and blue were utilized as a color palette where 3/4″ wide aluminum "tick" marks define the edge of a wall of glass. The black color flows through a sliding glass panel into The Reference Library.

The Reference Library design was derived from the volumes of material catalogs that are housed there. Each module of library shelving was divided with a 1/2″ glass fin identifying divisions based on the CSI Format. Following this precise alignment are 2″ wide aluminum accents, which tie both sides of the library together. Laser-cut, circular aluminum discs with varying radii lead from the entrance door to the circulation desk. The Reference Library logo is inserted into the row of these discs.

The precision and craftsmanship of the terrazzo flooring will last for many years to come.

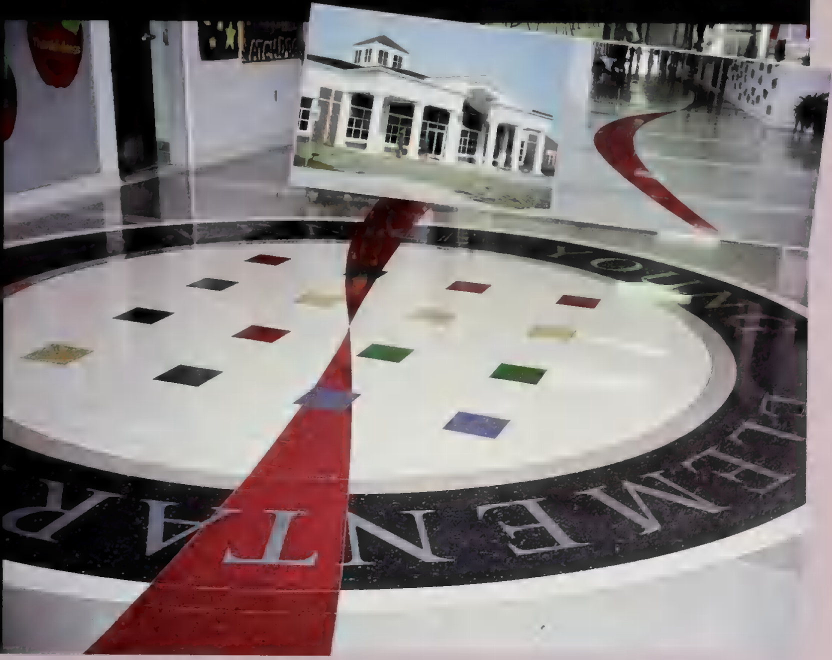
National Terrazzo & Mosaic Association 2001 Honor Award

Bernice Young Elementary School Springdale, Arkansas

Architect

Whittenberg, Delony & Davidson
Little Rock, Arkansas

The Bernice Young Elementary School in Springdale, Arkansas is your typical elementary school, classrooms, corridors, cafeteria, gym and library. What distinguishes this elementary school from the others is the creative design in the terrazzo floor. The architect combined traditional terrazzo colors with bold primary color accents, creating a more cheerful learning environment. As you walk down the corridor, you follow a bright red ribbon in the terrazzo. At the corridor intersections the ribbon twists through a white circle with primary color squares. The cafeteria completes the festive atmosphere with 250 12″ x 12″ randomly placed squares with bright primary color creating the effect of confetti all over the floor. The school district and architect already knowing the ease of maintenance a terrazzo floor provides included a 4″ high poured-in-place terrazzo base. The budget on this project was tight as usual for an institutional project, however, with the creativity and use of bright colors, the terrazzo fell within budget. Bernice Young Elementary School consisted of 3/8″ epoxy terrazzo utilizing 8 colors. All divider strips were 1/8″ zinc. The main school design used solid 15″ high stainless steel letters. There was a total of 13,000 sq. ft. in the main public student areas. There is 1;500 lin. ft. of 4″ high poured-in-place terrazzo base.

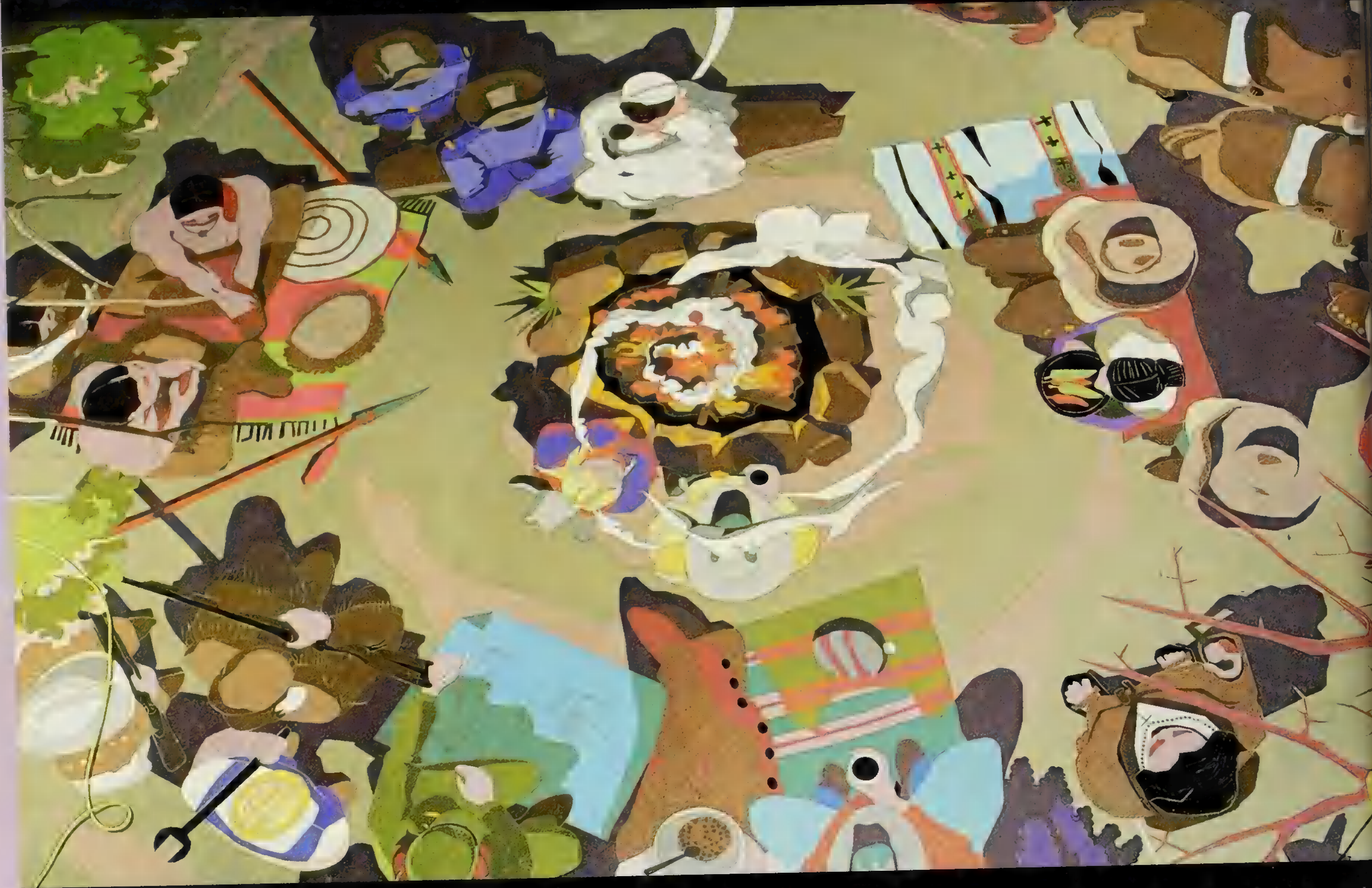


National Terrazzo & Mosaic Association 2001 Honor Award

JOB OF THE YEAR

2001

Bob Bullock State of Texas History Museum   Austin, Texas



Architect
HKS Architects
Dallas, Texas

Designer/Artist
Robert Ritter
Santa Fe, New Mexico

The State of Texas commissioned artist Robert Ritter to design a floor mural depicting the fascinating history of Texas. This mural would be included in the construction of the new "Bob Bullock - State of Texas History Museum" in Austin.

After months of rendering, Mr. Ritter presented his design to the State of Texas Conservation Board. The Board was amazed by his drawing that featured smoke rings rising from a cowboy's campfire in the center of the mural. Surrounding the campfire are images of people, places and events that accurately represent the unique history of the state.

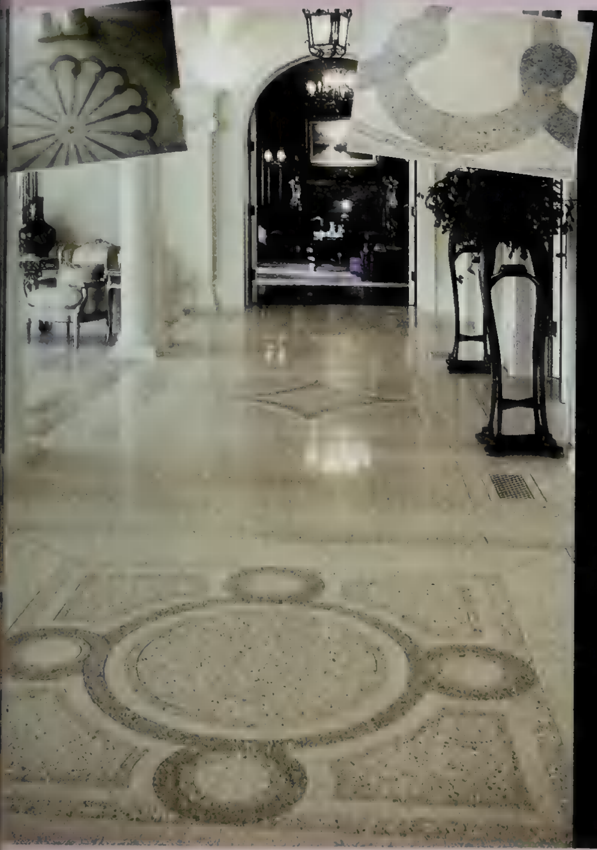
The highly complicated design features in great detail, images of Texas Indians, Cowboys, slavery, Vaqueros, horses, herds of longhorn, the Treaty Oak in Austin, Bluebonnet flowers, Palo Duro canyon, cacti, missions, the Gulf of Mexico, and the beautiful Texas sunset.

It was decided that only terrazzo could be the medium to accurately depict this detailed work of art. Since this mural was to be a focal point of the new museum, it would best be placed in the grand entrance and rotunda floor of the museum.

To begin, CAD drawings were developed using the renderings as a reference. A paint-by-number system was developed. Then, full-scale patterns were plotted. Forty-six colors of epoxy terrazzo were meticulously selected to be an exact match to the artist's rendering. The epoxy formulator went to extraordinary lengths to match the epoxy matrices to the artist's design. It was very important to the artist and the State of Texas Conservation Board that the finished terrazzo floor be an identical match to the artist's vision.

The rotunda floor is a 40-foot diameter space, which consists entirely of epoxy terrazzo surrounded by stone. The terrazzo continues throughout the museum in a two-color pattern. The terrazzo throughout the museum is inter-mixed with Texas granite.

What you see today when you walk into the Bob Bullock State of Texas History Museum is nothing short of a stunning piece of art. Taking more than eight months to design the strip, pour the color, grind and polish, the rotunda floor is a spectacular sight for which the State of Texas can all be proud.



National Terrazzo & Mosaic Association 2001 Honor Award

Mancuso Residence
Los Angeles, California

Architect
Landry Design
Los Angeles, California

The entire house was designed as an Italian Villa. Working with the architect, The subcontractor showed that terrazzo would achieve the "old world" look. Twelve different strip patterns were used throughout the residence. The difficulty in this project was the subtle shade differences in color. Samples chosen were then used as the basis for a complete mock-up. Installation of the terrazzo along with "expensive imported marble" left no room for error. Terrazzo was used both upstairs and downstairs.

National Terrazzo & Mosaic Association 2001 Honor Award

Mohegan Sun Casino Uncasville, Connecticut

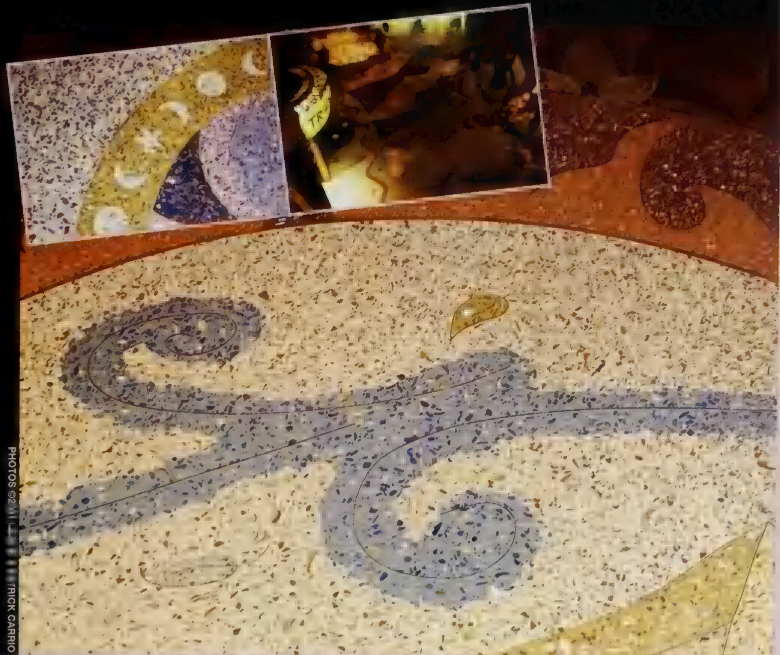
Architect
Kohn Pederson Fox Assoc. PC
New York, New York

Interior Architect
Rockwell Group
New York, New York

With a colorful title like "Project Sunburst," the expansion of the Mohegan Sun Casino in Uncasville, CT had to be special. Once completed, the expansion will triple the size of the original casino, adding over 4 million sq. ft. of casino, arena and hotel space.

This $1 billion fast-track project presented several challenges for the the Terrazzo contractor. Most importantly, the entire 52,000 sq. ft. of 1/2" Epoxy Terrazzo was artistic. To arrive at the final project palette of 40 colors, over 70 samples were submitted for the Architect's review. Most colors utilize 100% Premium Aggregate. Almost 45,000 lbs. of Size #5 Mother of Pearl were consumed on this project! The brass divider strip patterns were complex, irregular, and non-repeating. The layout had to be hand-drawn onto the slab from a scaled drawing before strip work could proceed.

The work on this project was divided into several different areas. Terrazzo was installed in four restaurants and one coffee shop, in the Retail Corridor, in a covered exterior entrance, and in a series of 18 round médallions set within fields of alternate flooring materials. Epoxy Terrazzo treads and risers were installed on 2 main staircases.



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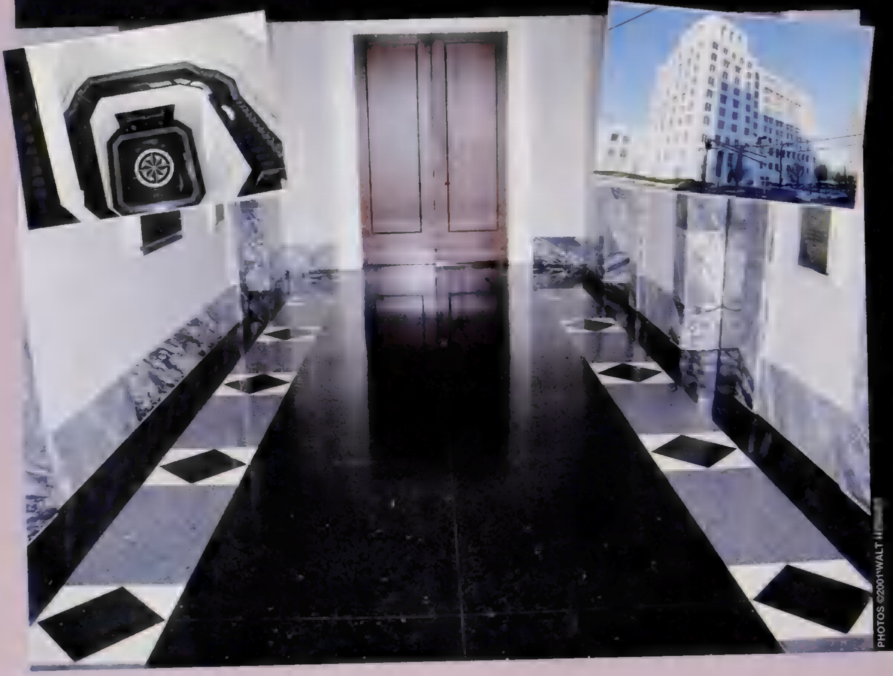
National Terrazzo & Mosaic Association 2001 Honor Award

Federal Reserve Bank of Atlanta Atlanta, Georgia


PHOTOS ©2001 WALT

Architect
Smallwood, Reynolds, Stewart, Stewart and Assoc.
Atlanta, Georgia

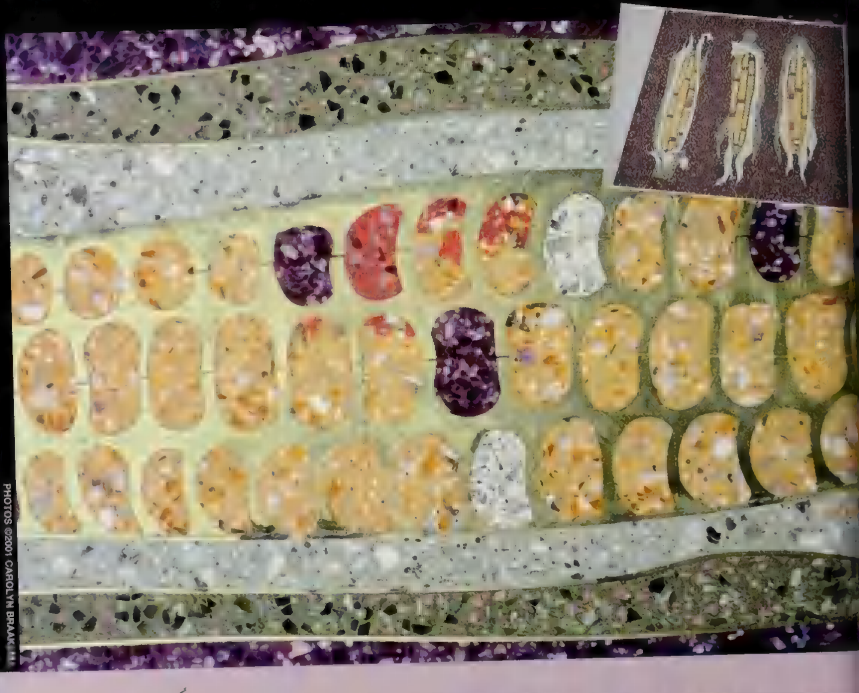
The nearly 20,000 sq. ft. of epoxy terrazzo in three colors was placed in the Employee Entrance Lobby and Corridors along with the Food Service areas. A 14" tall splayed two piece pre-cast base was installed with numerous mitered inside and outside corners. The finished base has the appearance of a solid piece of formed terrazzo to mirror the profile of the wood base used in the project. Three floors of poured and ground in place two color stair treads and risers along with stringers and landings were also installed.
The traditional pattern of the terrazzo was selected to bring to the new facility the permanence, durability and stability of terrazzo as was in the original Downtown Atlanta location.

National Terrazzo & Mosaic Association 2001 Honor Award

Iowa State University - Hawthorn Court Ames, Iowa

Architect
Rietz Consultants
Ames, Iowa

Hawthorn Court is the new student apartment complex on the Iowa State University campus in Ames, Iowa. The Community Center for the apartments provides a place for the students to study, pick up take-out meals, eat, and gather.
The Center was designed from the beginning with nice finishes, to become an attractive building. The designer was allowed to influence interior finishing and made choices that she believed ultimately soften and humanize the core of the building. Some features, such as the fireplace and chimney, block walls and terrazzo floor, were already in place. Where it seemed appropriate, the designer upgraded the existing materials, always aware of balancing function and aesthetics. The art enhancements grew out of the shape and function of the building, and from regional images. The designer drew her terrazzo palette selections from the new carpet colors and from the content of the floor images. The images are based on food production, as Iowa is a major producer of corn and soybeans. Iowa State University is a leader in research for the use of these farm products.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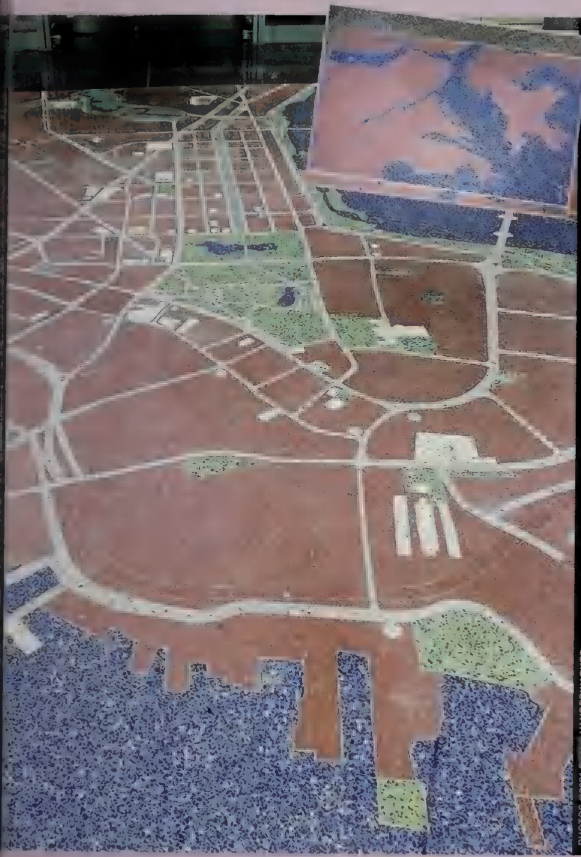

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National Terrazzo & Mosaic Association 2001 Honor Award

10 St. James Avenue
Boston, Massachusetts

Architect
Skidmore Owings & Merrill
New York, New York

One of the most interesting things about the city of Boston is the way in which the city fathers were able to expand the city's available land area to suit the needs of its growing population. Much of modern Boston is built on fill; the land was reclaimed from the Atlantic Ocean piece by piece. This development over time is depicted in the 3/8″ Epoxy Terrazzo floor in the atrium lobby at the 10 St. James Avenue building in Boston, Massachusetts. Each of the dated 4′ x 3′ maps contains an amazing amount of detailed strip work. To help visitors realize just how much of the city's land is man-made, the location of the 10 St. James building is marked in brass on each of the 8 maps. Viewers can see that before 1880, the building's location was underwater.

The center of the atrium space is devoted to an intricate map of Boston in the modern era. Five colors of epoxy terrazzo are used to denote land, water, parks, roads, and key buildings. Again, an incredible amount of detail is included: highway cloverleafs, the Esplanade on the banks of the Charles River, even subway stations are marked by their familiar "T" logo.

The remainder of the Terrazzo surrounding the maps was completed using tans and grays. This neutral palette makes the colorful maps even more appealing to the eye.

National Terrazzo & Mosaic Association 2001 Honor Award

White River Gardens
Indianapolis, Indiana

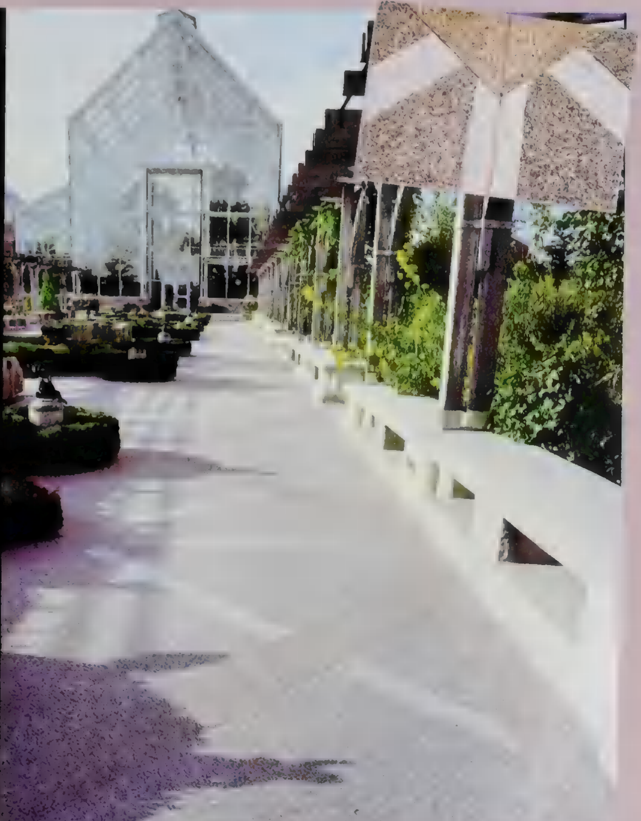
Architect
Wollen, Molan and Partners, Indianapolis, Indiana

Designer/Artist
Rundell Ernstberger Associates, Indianapolis, Indiana

Located proudly inside the White River State Park, White River Gardens serves as the centerpiece entry for the ingress and egress to the Hilbert Conservatory Building. The nine thousand sq. ft., five color, bonded rustic terrazzo flows from the interior of the Conservatory to the exterior trellised garden area. Providing visitors to the facilities an explosion of color and scents that are both unique and beautiful.

As the Landscape Architect pondered how to combine the many and varied exterior finishes without overstating and cluttering the area, rustic terrazzo provided the solution to this question. The color changes and area terminations in the rustic terrazzo are scored to provide a subtle yet functional defined edge for movement as well as component definition. The medium rustic terrazzo wash provides a smooth yet textured surface to provide for the desired non-slip qualities in this public area.

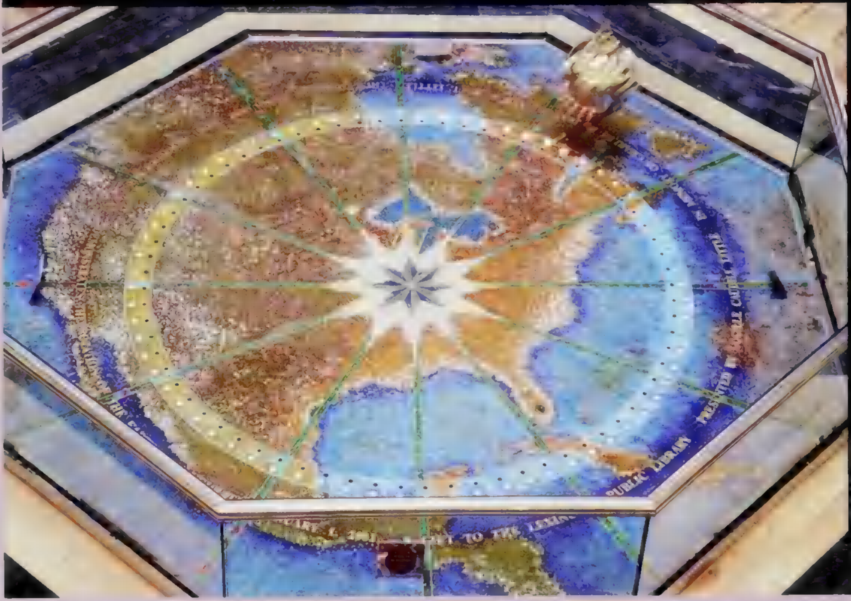
The designer's selection of subtle yet brilliant rustic terrazzo colors combine and blend with the beautiful, breathtaking, and ever-changing hues of the flowers and perennial planting areas that are both exciting and soothing at the same time. The White River Gardens is the most beautiful and peaceful place in the city. The Gardens are also the busiest place, demonstrated by the many weddings, meetings, and rendezvous that are planned in this public space yearly. White River Gardens with the beautiful rustic terrazzo finish is truly a rose in the bouquet of Indianapolis's skyline.



National Terrazzo & Mosaic Association 2001 Honor Award

Lexington Public Library Lexington, Kentucky

SPECIAL AWARD



PHOTOS © DAVID [illegible] LUDADIO

Architect
Sherman, Carter, Barnhart
Lexington, Kentucky

Designer / Artist
Adeline Wichman
Lexington, Kentucky

A local philanthropist dreamed she walked into the central public library and saw the map of the world with a Foucault pendulum swinging over the top. The city of Lexington wanted to update the 5 story atrium in the library but did not have the funds to do so. Fate brought the two together and the philanthropist donated the money to have their dreams fulfilled. The artist chose terrazzo for flexibility and color of design since the terrazzo was used artistically, that is, the location of chips was determined at the time of installation. The epoxy terrazzo mosaic design is of the northwestern hemisphere. No strips were used except at the compass and wording. All colors were achieved with 36 different colors of glass, marble, and mother of pearl chips. The terrazzo contractor used clear epoxy resin which gives the floor a depth and dimensional appearance that can not be achieved with traditional terrazzo. No tinted epoxy resin was used.

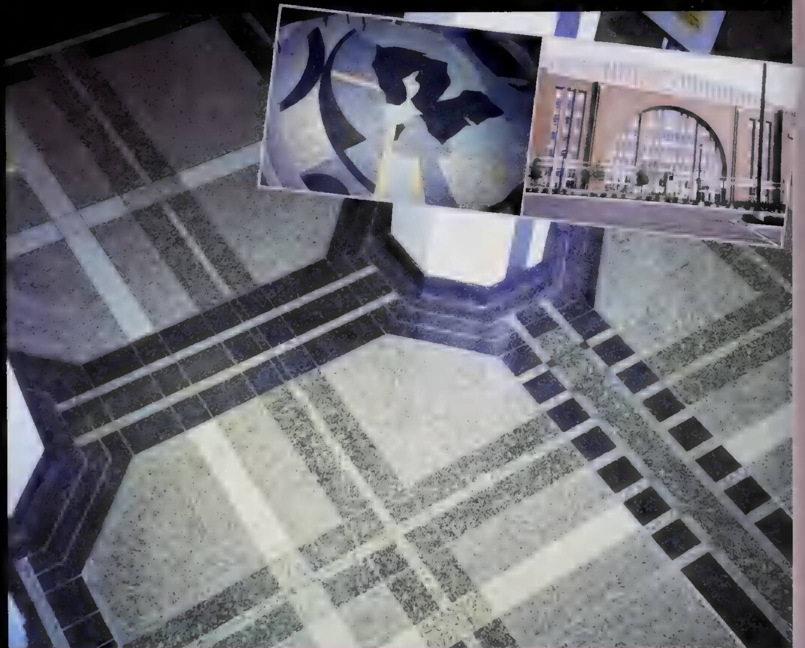
National Terrazzo & Mosaic Association 2001 Honor Award

American Airlines Center Dallas, Texas

Architect
David M. Schwarz, Architectural Services
Washington, D.C.

Designer / Artist
David Griggs
Denver, Colorado

When the new American Airline Center was in the conceptual design stage, the only floor product considered for the main public concourse areas was terrazzo. The design team knew terrazzo would provide the durability, design versatility, long term maintenance and cost needed for a high profile and continuously used building. However, this project was schedule driven from the beginning with an aggressive completion date. As a highly detailed terrazzo project as this was, it took just 6 months to complete. The American Airlines Center was specified using 3/8″ epoxy terrazzo, utilizing 20 colors throughout 5 levels. There is a total of 125,000 sq. ft. of floor. There is 14,000 lin. ft. of 6″ poured-in-place terrazzo base that is 3/4″ thick and ground and polished on top. The unique design in the terrazzo was considered classical art deco with 2″, 4″, 6″ and 8″ wide bands and borders highlighted at column lines creating this intricate pattern. Within the terrazzo on the main concourse are 8 abstract art designs of basketball and hockey players.



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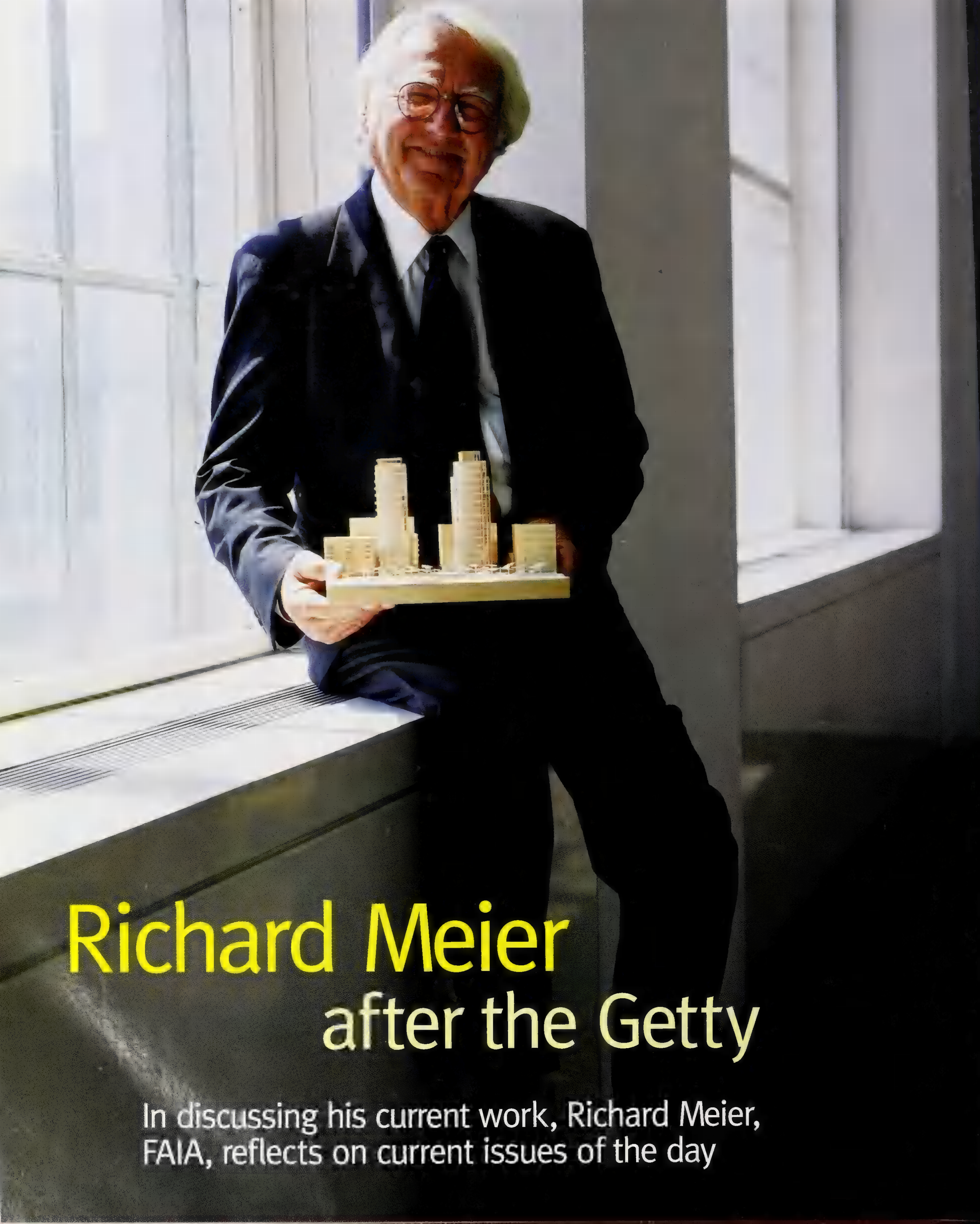


Richard Meier after the Getty

In discussing his current work, Richard Meier, FAIA, reflects on current issues of the day

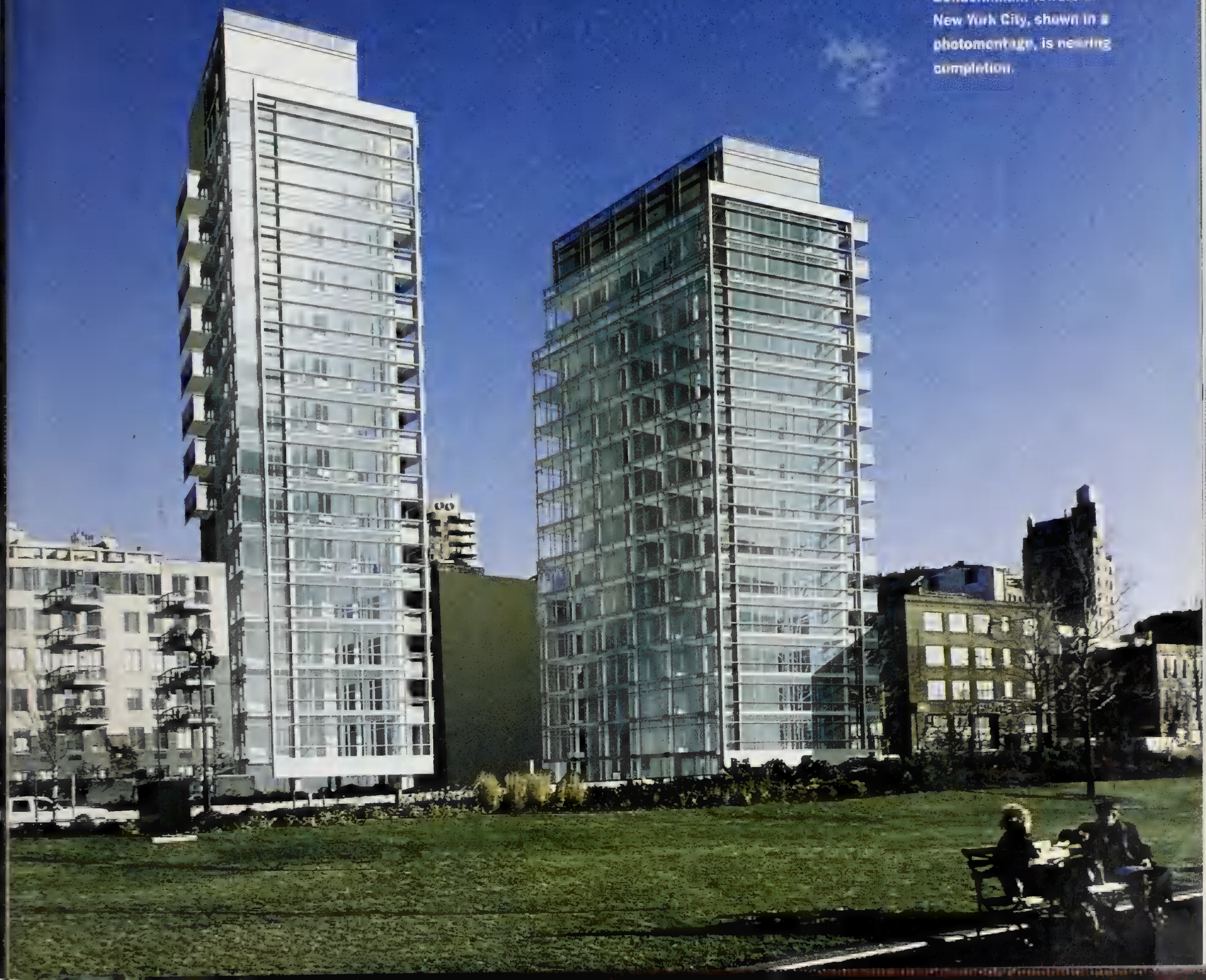
PORTRAITS: © SETH COHEN; ALL OTHER IMAGES: COURTESY THE ARCHITECT

Interviewed by Robert Ivy, FAIA

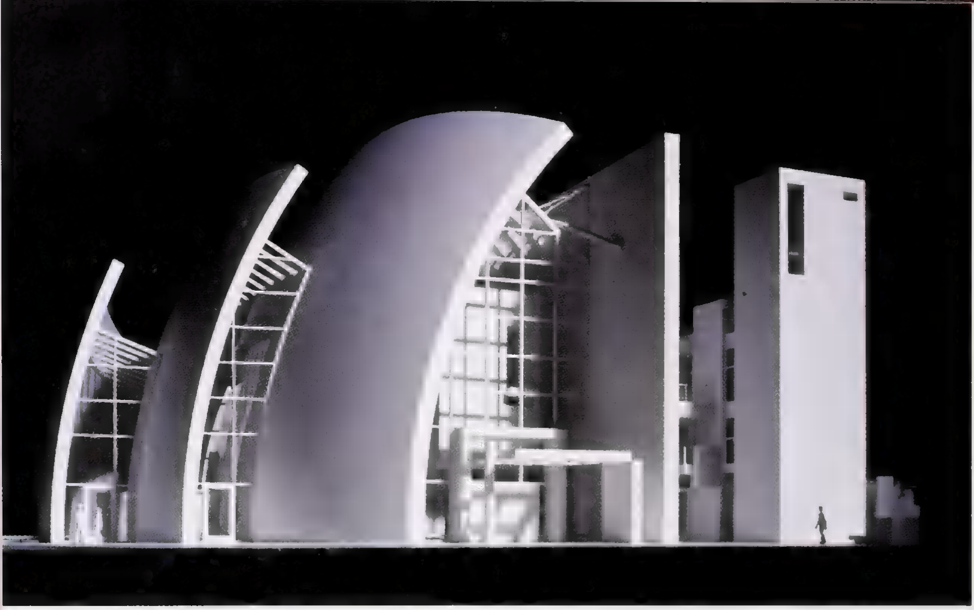
*It's been five years since the opening of the Getty Center—the Big Kahuna of Richard Meier's career [*ARCHITECTURAL RECORD*, November 1997, page 78]. Since the Getty was completed, the eminent architect has found himself working on a number of smaller projects, while still keeping offices in New York and Los Angeles. On the eve of his 40th year with his own practice,* ARCHITECTURAL RECORD *visited Meier to discuss his current work and his thoughts on a number of topics, such as the difference between European and American architecture, the importance of technical innovations, the influence of the computer on design, and the planning for the World Trade Center site. As is well known, after he got his B.Arch. from Cornell in 1957 Meier's career began with houses. He worked for Davis Brody Wisniewski, then Skidmore, Owings & Merrill, and finally, Marcel Breuer before opening his own office. His designs for houses immediately brought him renown, and he became known for his mastery of scale, detail, and simplicity. During his career, Meier has never wavered from his commitment to the Modernist vocabulary, nor succumbed to the vicissitudes of fashion. Instead, he has been able to accomplish a difficult thing for an "established" architect with an expanding practice: maintain rigorously high standards of design.*

ARCHITECTURAL RECORD: *Your career took off with the Smith House in New Canaan, Connecticut, in 1965, which was followed by other residential projects, museums, schools, office buildings, and town halls, until finally the Getty Center, finished in late 1997. Where do you go after the "commission of the century"?*

RICHARD MEIER: Ironically, right now we're doing a number of small-scale projects. At the time we were working on the Getty, I was doing many other things. I would spend two weeks a month at the Getty and then two weeks working on other projects. When the Getty was completed after 18 years, other work was finished, as well, such as Siemens in Munich (1986). And shortly after the Getty, the federal courthouses in Islip, New York, and Phoenix opened. More recently, we finished the Rickmers Headquarters in Hamburg, Germany, and the Canon



The 173/176 Perry Street Condominium Towers in New York City, shown in a photomontage, is nearing completion.



Jubilee Church, in the Tor Tre Teste area of Rome (left), is under construction; completion is expected in 2004.

Headquarters in Tokyo.

Yet I hadn't thought the Getty would leave as much of a void as in fact it has. The current economic and political situation has slowed things down. Universities seem to be our most active source of work right now; for example, we are designing the new building for the History of Art department and Arts Library at Yale, and a Life Science Technology Building at Cornell University. But the private sector has pulled back the greatest amount in terms of their planning for the future.

AR: *Which small-scale projects are of particular interest to you?*

RM: We're doing a small, private art museum in Baden-Baden for Frieder Burda—an entrepreneur who has an extraordinary collection of contemporary art. The project, which is in a city park next to the Kunsthalle, is like a big house. Burda is giving the building and the collection to the city. We're also doing the Peek & Cloppenburg Department Store in Mannheim, Germany, and a bridge in Alessandria, in northern Italy, which did have some problems but is going ahead. In the United States, our L.A. office is adding onto Philip Johnson's Crystal Cathedral in Orange Grove, California, with a Hospitality and Visitors Center. And we are designing some houses—one in Katonah, New York, the other in Santa Barbara, California.

AR: *Yet you still design houses. Why? Often architectural offices of a certain size don't want to be bothered.*

RM: I enjoy houses—that's why I got involved advising Coco Brown on selecting architects for his Sagaponack development on Long Island. A house goes quickly compared to a public building. And you can do different things with houses, such as explore energy conservation by making use of location, climate, orientation to the site. We've explored the use of glass louvers on the Katonah house to cut down glare.

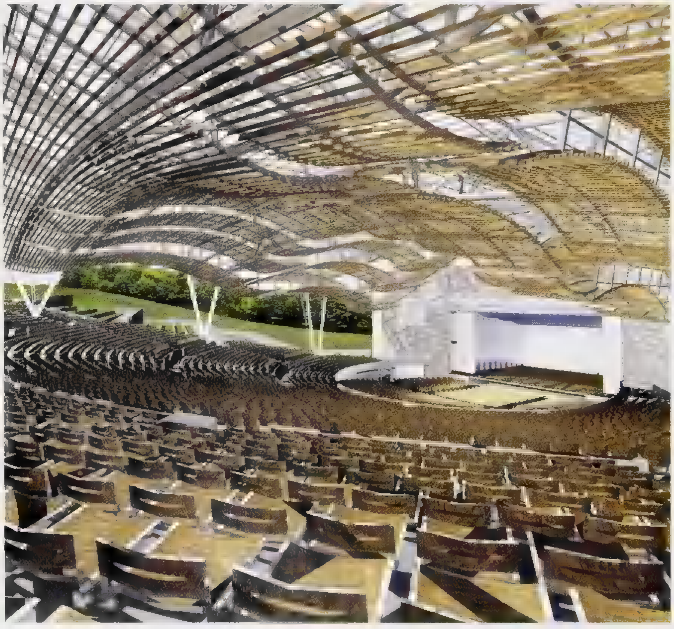
AR: *And, of course, there is the Jubilee Church in Rome, which is not so simple. This series of curved shells has a more plastic expression than much of your previous work. Is this fluidity a design direction on your part?*

RM: This church really demanded a different attitude and a different approach. The sanctuary space is composed of three sections of a sphere, which enclose the day chapel, the baptistry, and the atrium, with natural light coming in from above. These curved walls are cantilevered vertically from the ground, with glass all around and between them. Rather than being poured-in-place concrete, they are precast, since it was easier to control the form of the sphere and give the sections the same smooth, white surface inside and out. By the way, we're using the concrete originally developed by Nervi, when he designed the Palazzo and Palazzetto dello Sport stadiums in Rome in the late 1950s.

In the church, each segment of the sphere weighs about 8 tons. The segments were shipped to the site, where a crane moved along a track and installed the pieces, which were then posttensioned. No one's ever erected anything of this scale in terms of a precast assembly system. And I must say, we have extraordinary structural engineers, Italcementi, who

The Cittadella Bridge, Alessandria, Italy, awaits approvals for a go-ahead.

The Bethel Performing Arts Center was designed in 2001 for Bethel, New York.



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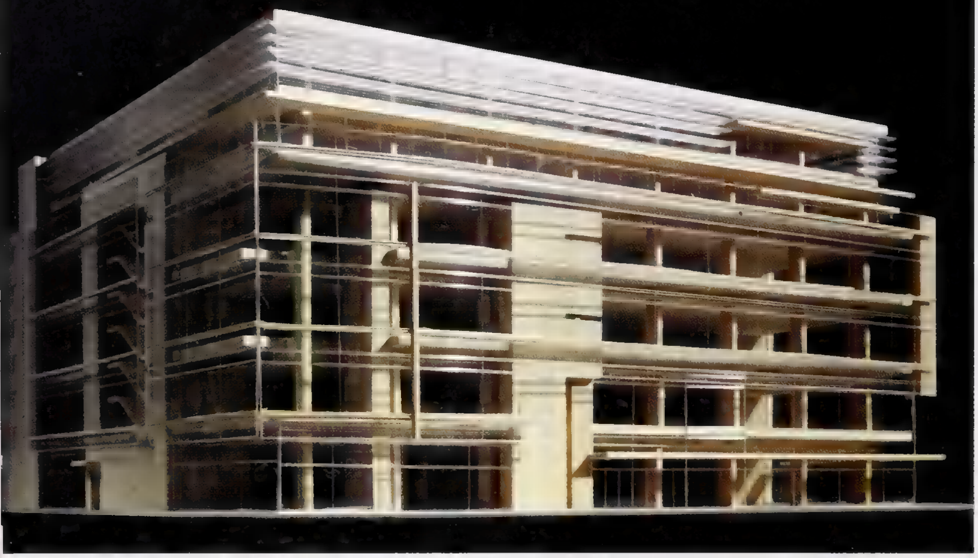
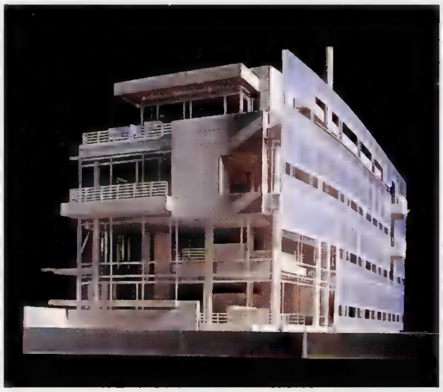
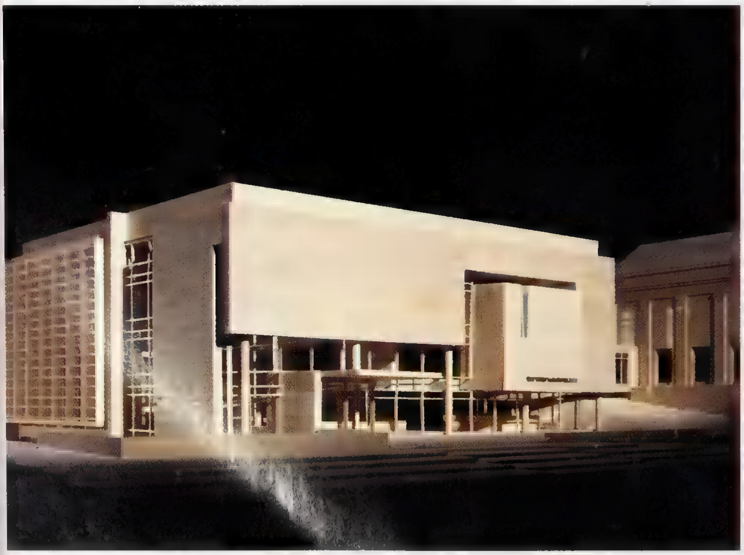


The Peek & Cloppenburg Department Store, in Mannheim, Germany (above), to open in 2004, features a three-story-high glass enclosure cantilevered from the main structure.



The Rickmers Reederei Headquarters, in Hamburg, Germany (right), has just been completed. Notable is an elegantly glazed screenlike wall.

The Burda Collection Museum, in Baden-Baden, Germany (below), goes into construction this fall.



worked with us in Italy and figured out how this thing could be manufactured, taken to the site, and erected.

AR: *Initially you described a challenging business environment, but intellectually, you're involved with new ideas here. Although the church has been going slowly, doesn't it explore form and material differently from anything you have done?*

RM: No one's done it before! With another project, the Performing Arts Center in Bethel, New York, we designed a curved glass roof over a louvered timber ceiling, all supported by a space frame that spans 200 feet. Unfortunately, the project is not going ahead, but the concept, which we worked out with Arup, would have provided an outdoor roofed space sheltering 3,500 people, with additional seating on the lawn for 10,000.

AR: *As an architect, you have been readily accepted in Europe. Here in Manhattan—other than the renovation for Westbeth artists' housing (1970)—you hadn't had a major new building until you designed the Perry Street apartments now being completed in the West Village. How did you get involved with an American developer?*

RM: The Perry Street project is actually owned by a consortium of developers, including Richard Born, Ira Drukier, Charles Blaichman—and other investors, one of whom suggested me. Certain ones in the group have been involved in boutique hotels. This is also a small project: There are only 14 floors and 28 apartments in two buildings. Each building stands on the corner of Perry Street and West Street to create a gateway for the Village near the water. It makes Perry Street a symbol of the regeneration of this area.

AR: *Why are the buildings split into two towers and placed across a street from each other?*

RM: The consortium owned the two sites, and one site is almost twice the size of the other one. The smaller one, on the north, has 2,200 square feet per floor, while the southern side has 4,400 square feet. They are designed as simplexes, or to be combined into duplexes and triplexes.

AR: *Are you going to live there?*

RM: I think so.

AR: *It is said that one reason the architecture is so good in Europe is the widespread competition process. Do you agree?*

RM: The Jubilee Church resulted from a competition. Almost all of our European projects resulted from competitions, which enable architects to do very important work.

AR: *You had both municipal and corporate clients there?*

RM: That's right. And they were all competitions.

AR: *If the competition model were accepted in America, would that be beneficial to architecture?*

RM: That's a good question, because I keep saying I'm not doing any

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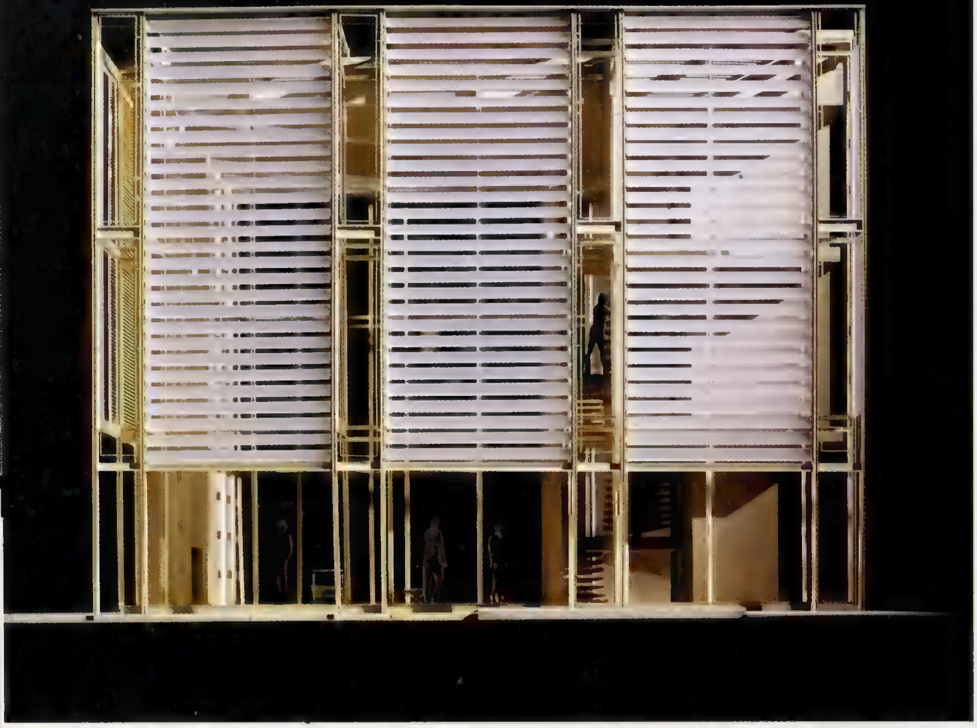


A house in Katonah, New York, unbuilt, was designed to be covered with a skin of glass louvers and stainless-steel rods. A portion of the model shows the triple-height living room facing south.

more competitions. And yet, I'm working on one now—in New York. It's for the redevelopment of Lincoln Center's Avery Fisher Hall, and I'm doing it with Arata Isozaki. But often a competition requires a huge amount of work for very little payback. I was a young architect when I began entering competitions in Europe. Also, European offices are set up in a way to do them—where a whole portion of the office just works on competitions. And European competitions are run well. It is the way of selecting an architect for a building that's going to be built. In America, a competition is often used to throw out some ideas and then decide what to do.

AR: *Here the competition is the beginning stage for the fund-raising.*

RM: That's exactly right. And you're just being used. For that reason, many competitions in America are a sham. Another drawback is that too often the winning design is not thought through—the architects just move on. There's no new engagement with a client as a result of it.

AR: *Do you think Lower Manhattan could benefit from a competition for the World Trade Center site?*

RM: No one knows enough about how to write the program for this site in order to conduct a competition. Ground Zero is such an emotionally and politically complicated situation that it's going to take time to figure out what ideas are appropriate. Everyone has to be heard.

AR: *Let's assume that the Development Authority comes up with a realistic program five or six months from now, and there's a real competition process set up. Then …?*

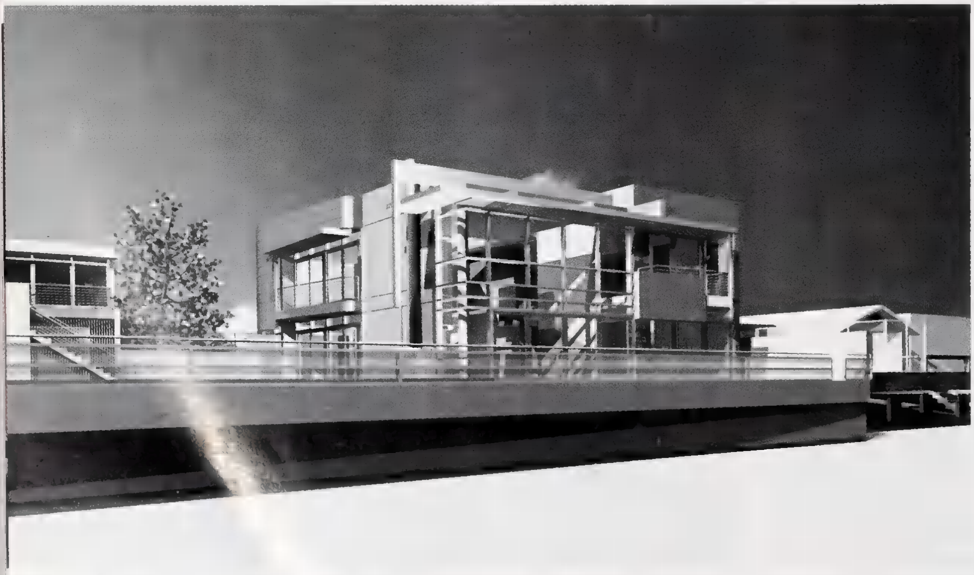
RM: Then a competition would be fabulous. Of course, you'd have to have a good jury. It should not be open. It should be an invited, limited competition. Some people wouldn't like that because it raises the question about why X is chosen and not Y. Nevertheless, it puts a certain seriousness into the process.

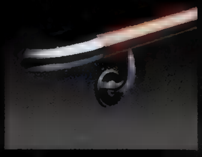
AR: *And then there is that old question about building tall buildings. Where do you weigh in? Do they have a place in our future?*

RM: The 21st century should be a century of tall buildings—as was the 20th. Now there is a hesitation to design an important tall building because of the fear of creating a symbol of something wonderful, which then becomes a target for terrorism. Eventually, I hope and pray this will no longer be the case. But it is going to be difficult, especially at Ground Zero, to design very tall buildings. They could sit empty for quite a while. But, tall is relative. Towers don't have to be 110 stories. Buildings of 50, 60, 70 stories make sense

(continued on page 248)

A Southern California house, just finished, has painted aluminum wall panels.





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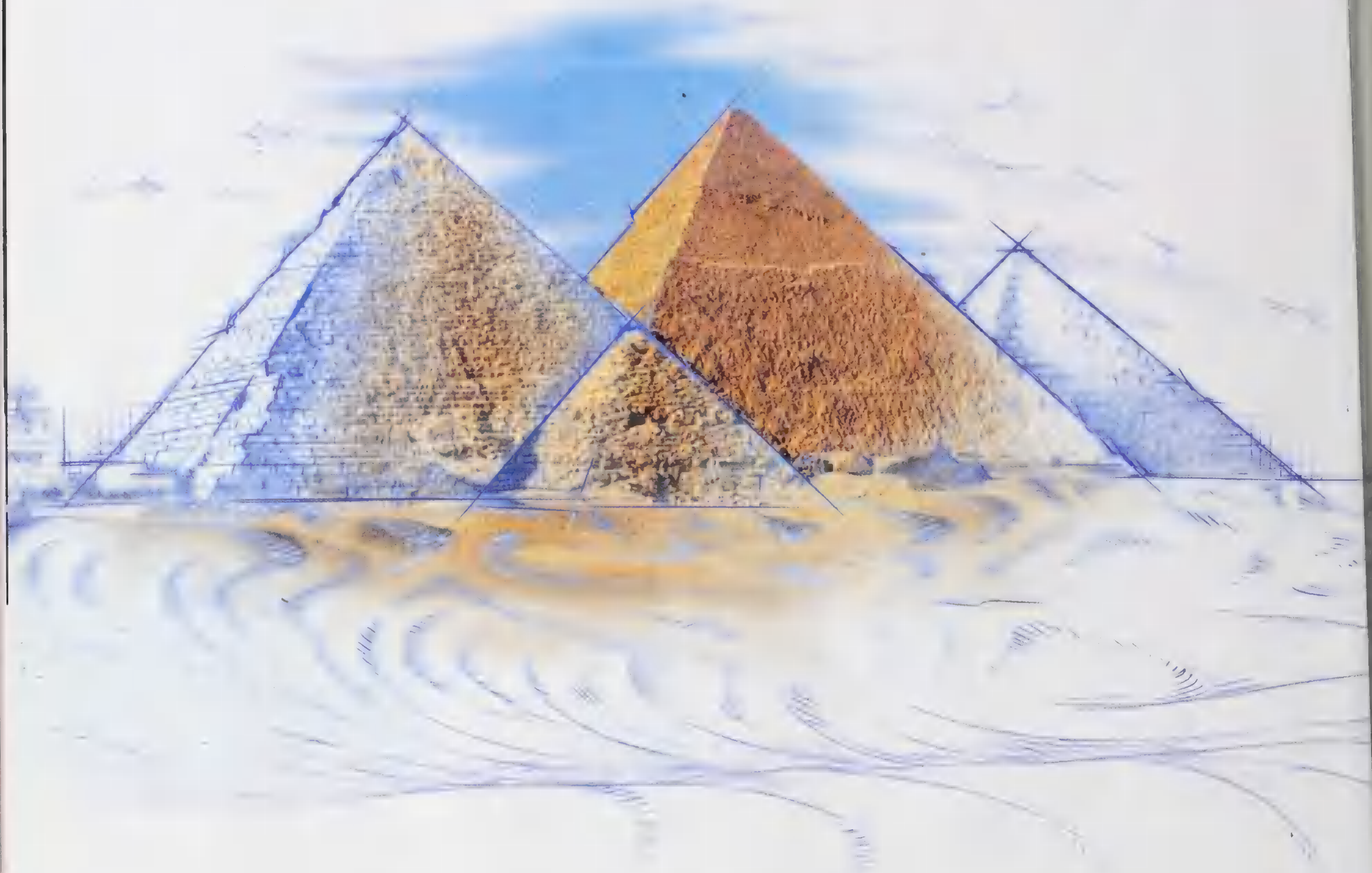

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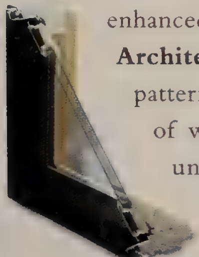

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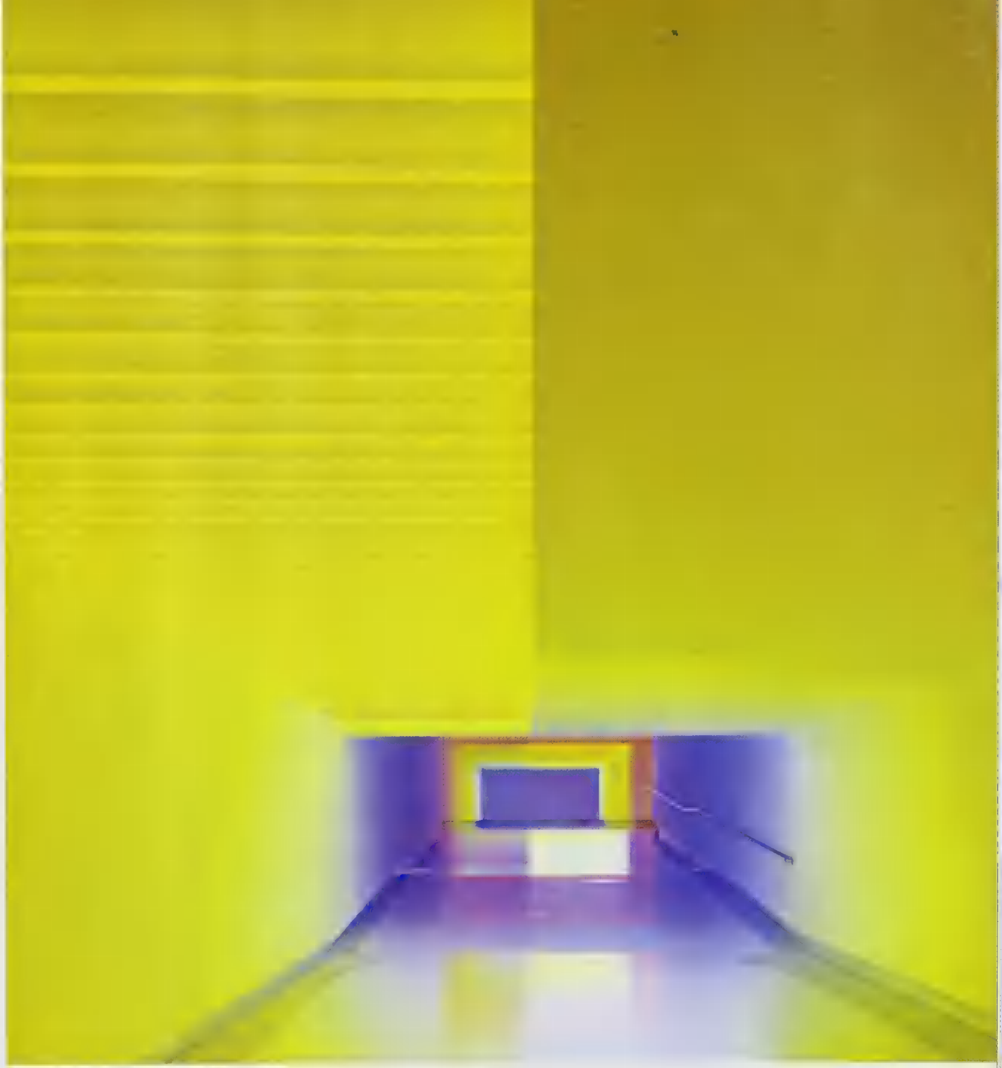
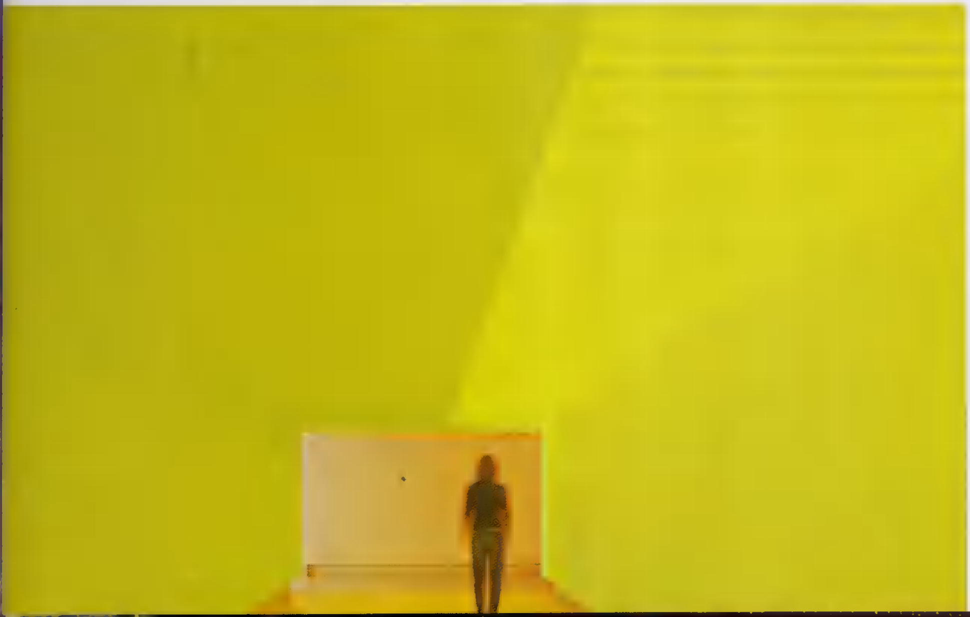
Tunneling into the depths of color and light

By Sarah Amelar



"It's like walking through sheets and volumes of color," says American artist Keith Sonnier of his recently completed *Verbindung RotBlauGelb (RedBlueYellow Corridor)*. Created for a sequence of underground passageways in Munich, this permanent light installation bathes architectural spaces in luminous, saturated colors, producing a rich atmospheric effect that visually dematerializes solid edges, subtly altering perceptions of scale, form, and distance.

The work was commissioned by Munich Re, the world's largest reinsurance company, as part of its ongoing program of permanent, site-specific art pieces for a 740-meter-long network of underground passageways linking its 10 office buildings in Munich-Schwabung. The company's arts program effectively began in 1912 when Munich Re's founder purchased and commissioned art for a new structure. But the tunnel installations, a symbiosis between art and architecture using light as the medium, date back only to 1994. Now including pieces by James Turrell, Mauricio Nannucci, Rolf Waltz, and four others, the subterranean corridors are accessible to company employees on a daily basis and to visitors during special viewings.

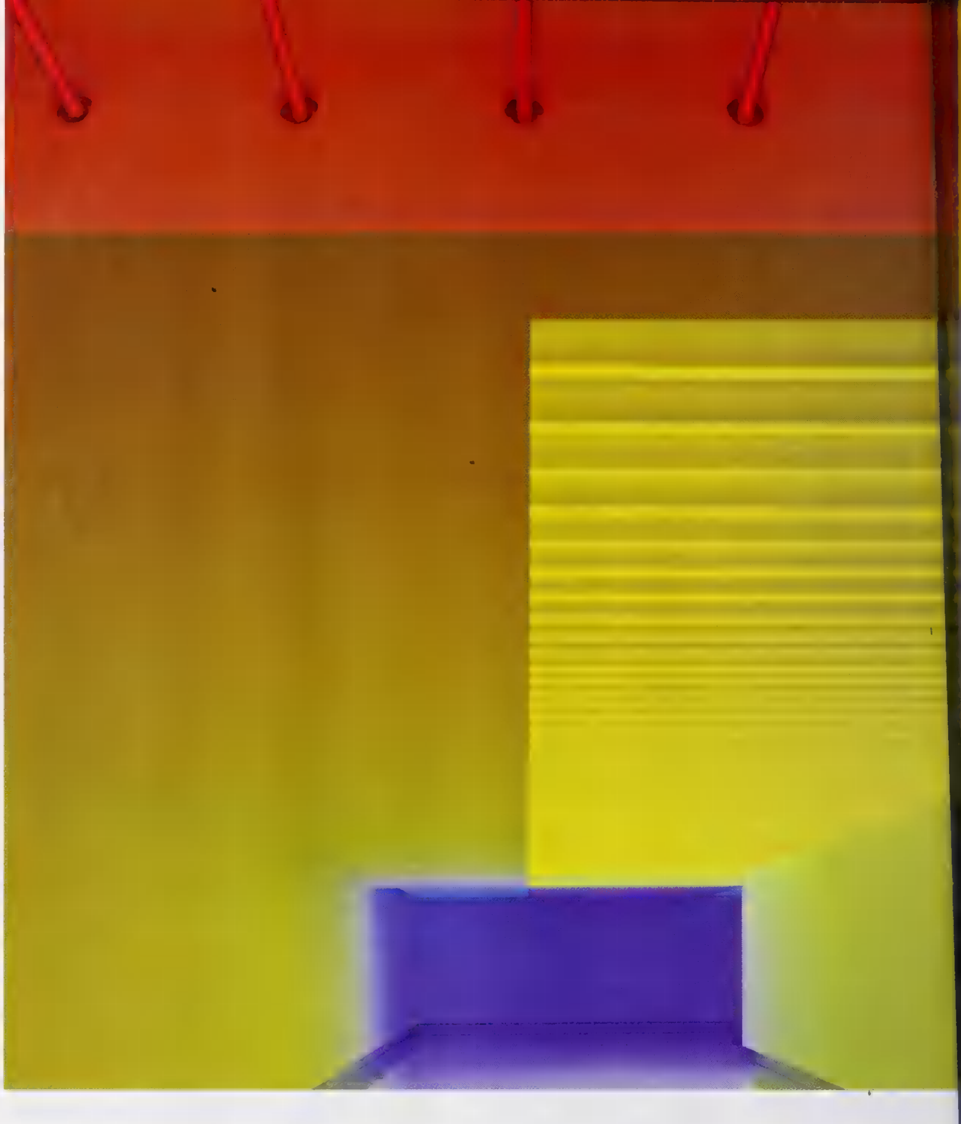


Many of Sonnier's previous chromatic investigations—exploring movement through space and the very nature of architectonics—had related intimately to the arteries, capillaries, and nodes of modern traffic systems. In the 1990s he completed his 1,000-meter-long *Lightpath* for the Munich Airport; *De Rouge à Bleu* for a Rouen, France, metro station; *Miami Heliotrope* for a Florida airport helicopter platform; and

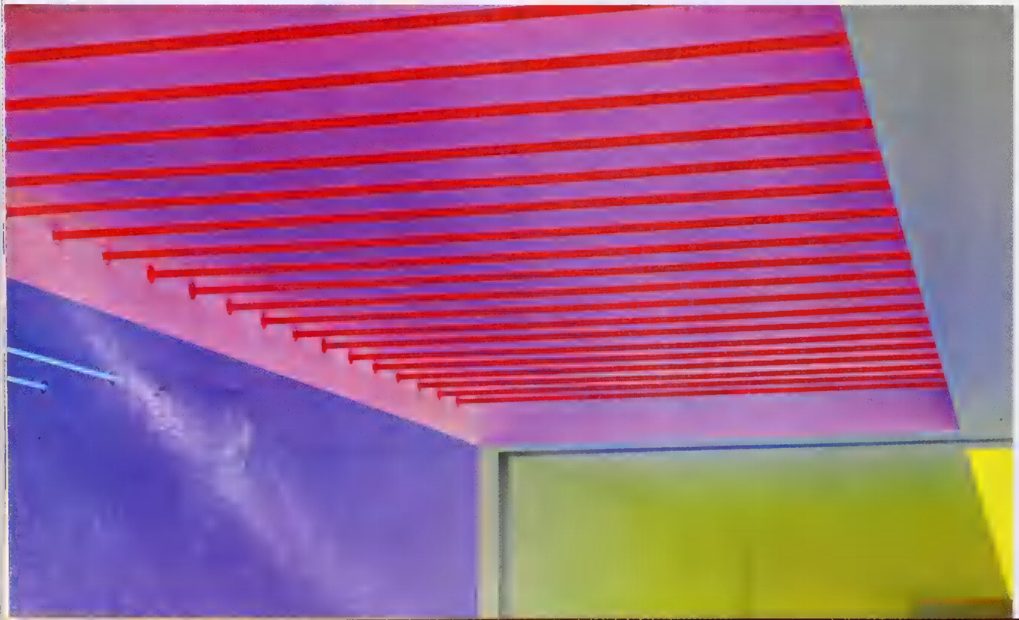
Tunnel of Tears for P.S.1 in New York City. Focusing on the qualities of architecture and open urban space, rather than traffic routes per se, his installation done in 2000 at architect Peter Zumthor's Bregenz Art Museum, in Austria, illuminated and reinterpreted the orthogonal building's translucent facades.

Some of Sonnier's projects have been created for existing conditions, but many have involved spaces constructed specifically for the installations. For *Verbindung RotBlauGelb*, the artist collaborated fully with architects Carlo Baumschlager and Dietmar Eberle as they carved out a zone for this piece. The architects' pragmatic mandate was to devise passageways connecting their new office building for Munich Re with the company's well-developed underground network.

Given a choice of tunnel sites, the artist says he rejected a "straight-shot corridor," in favor of a far more challenging sequence of passageways, approximately 150 meters long in total, varying in width from 2 to more than 6 meters across, and punctuated by ramps, multiple turning points, and access to elevator banks and exit stairs.



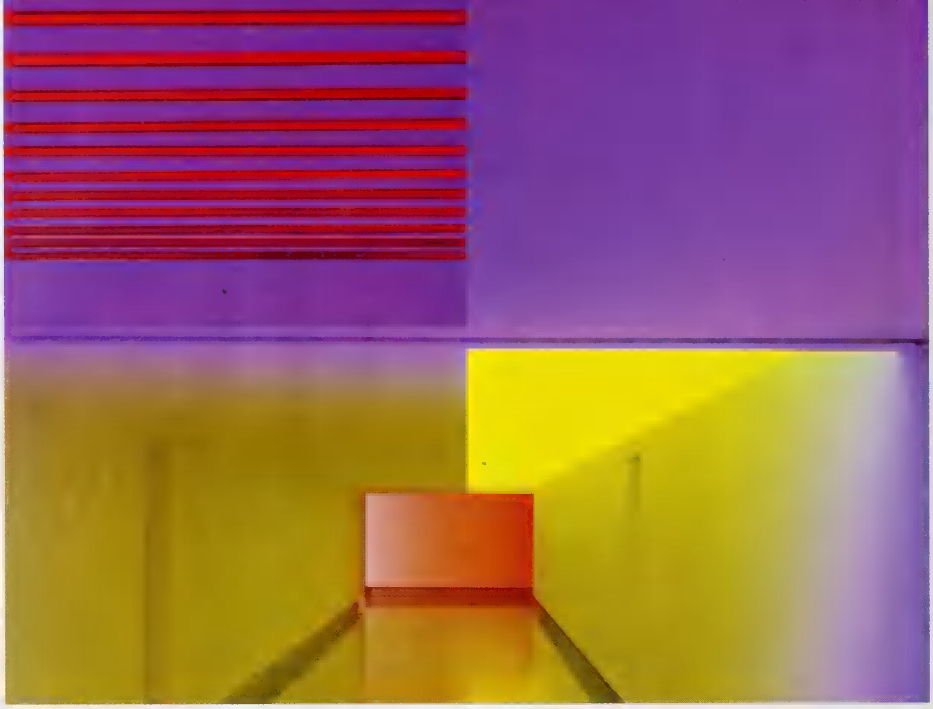
Working closely with Sonnier from the start, the firm Baumschlager + Eberle created a streamlined "canvas"—a series of corridors as smooth and free of obstruction as possible—that enabled the artist to recess his light sources, parallel tubes of colored gas, in the ceiling. Like much of the artist's earlier work, *Verbindung RotBlauGelb* is based on a trio of stable primary colors (neon gas for red, argon gas for blue, and a combination of fluorescent pigment and argon gas for yellow) that allows emitted light to spill from one zone to another, blending to form purple where red meets blue, or green where blue diffuses into yellow, and so on.



For all their lush beauty, Sonnier's interventions have a practical component, endeavoring, as the artist has written, "to render the urban context more readable." And so, he assigned red—a color that summons alertness and is traditionally associated with exit signs—to Munich Re's elevator banks. Discerning among the qualities of the three colors, he considers yellow easiest on the eyes, and therefore chose it for the longest stretches.

In *Verbindung RotBlauGelb*, all the light emanates from overhead, in part, says Sonnier, because "I don't believe art should be an obstruction." Baumschlager + Eberle's pure, clean-edged geometry—with walls generously revealed from the floors and seemingly

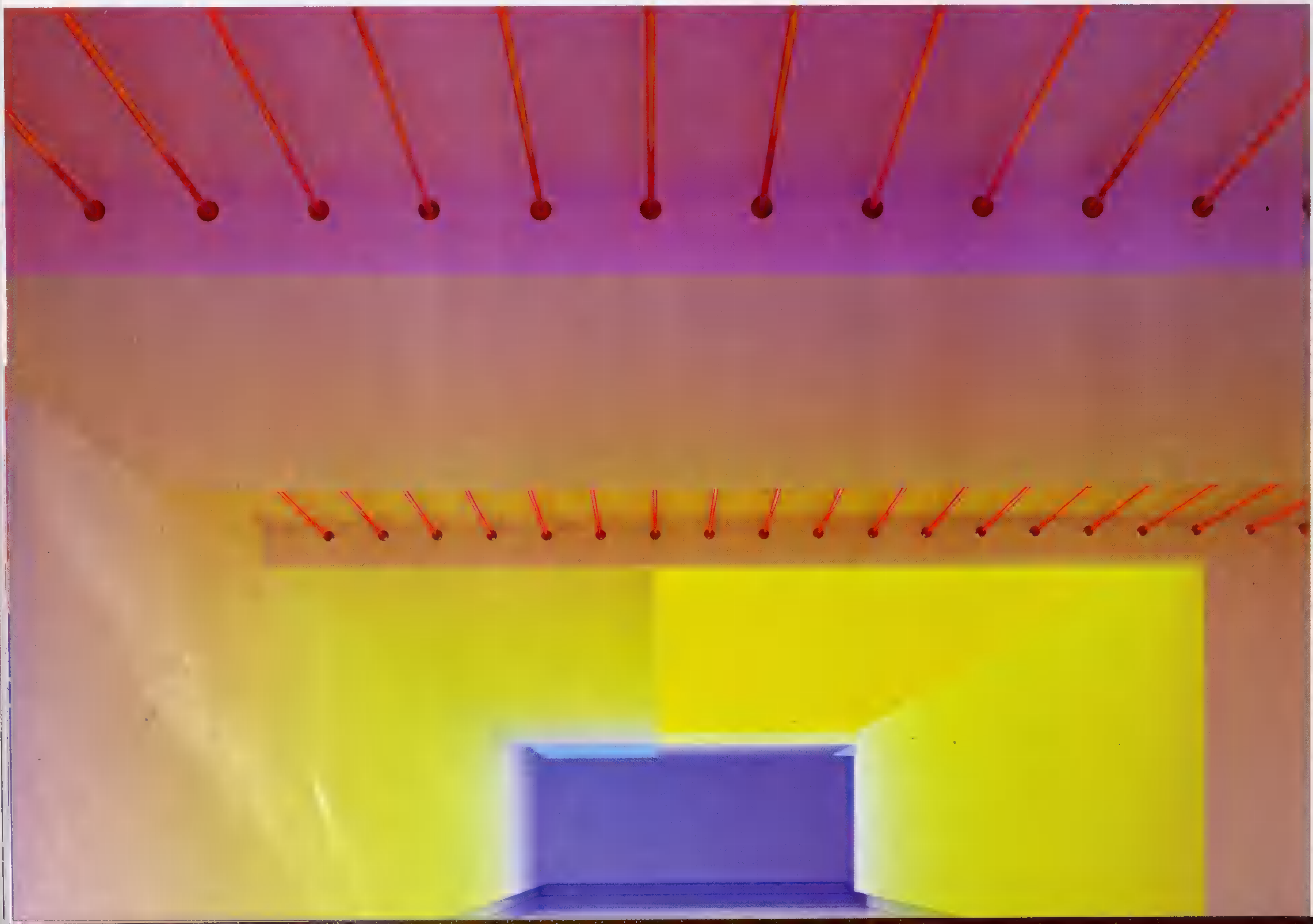
jambless doors—allowed the artist to shape, with light, a succession of entirely ethereal as well as more solidly formed lines, planes, and volumes. Some of these elements appear completely discrete, while others intersect or bleed into one another.



Throughout the *Verbindung RotBlauGelb*'s continuous sequence of corridors, the artist crosses the path of movement perpendicularly overhead with parallel, evenly spaced lines of light—reminiscent of ties on railroad tracks—that set up a rhythm accentuating perspectival convergence. This arrangement of luminous tubes also generates a sense of momentum, as the parallel lines approaching infinity appear to get closer and closer together. Reflective white surfaces on the floors and walls further enhance the installation's experiential qualities.

Verbindung RotBlauGelb offers deep immersion into sheer light. And before the elevator doors spring open, marking the entrance back into daylit reality, the tunnel provides a brief foray into an otherworldly realm. ■

Credits: *Dr. Susanne Ehrenfried—curator of arts program, Munich Re; Wolfgang Häusler—representative in Europe for Keith Sonnier.*



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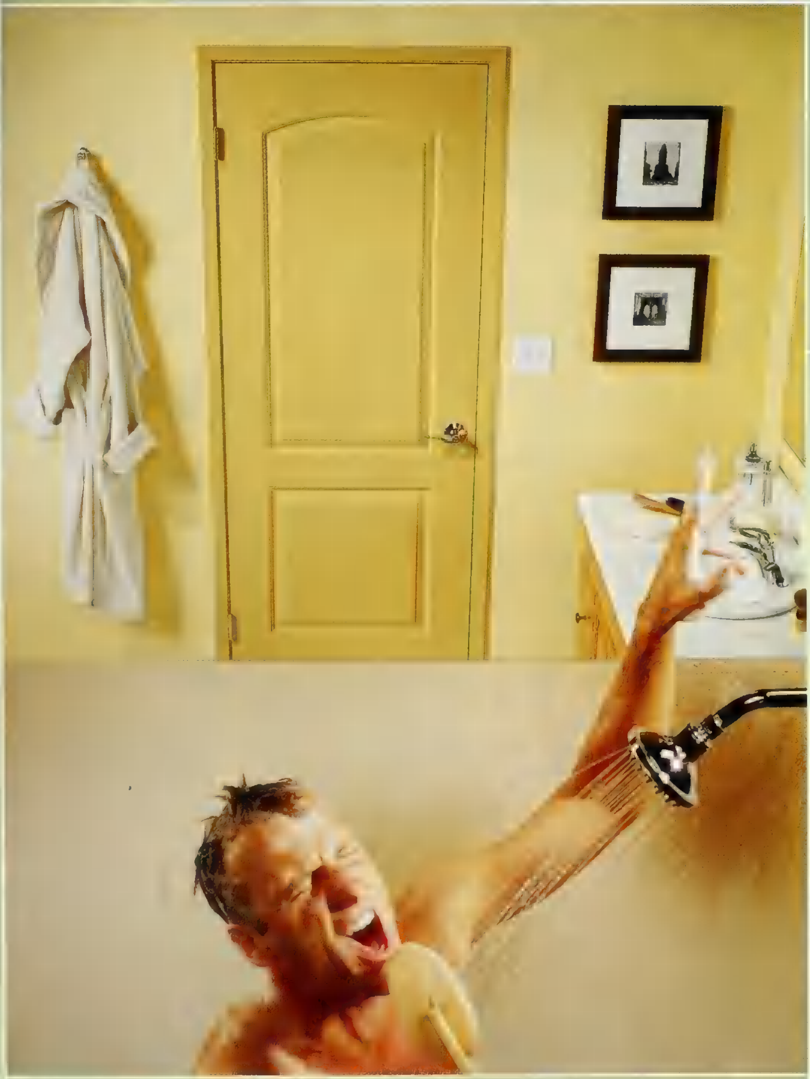

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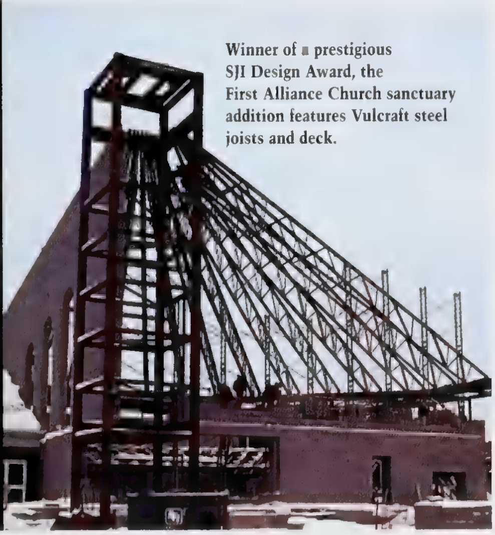

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Record Interiors 2002

Interior design at its best can offer mind-altering—or at least *perception*-altering—experiences. Approaching existing conditions, an architect may selectively reveal what's already there, plumbing its spatial, metaphoric, or experiential potential. Intrinsic features—such as views, structure, or overall proportions—may appear transformed through their interplay with new elements. Balancing, masking, celebrating, or transcending the so-called flaws or limitations of a place, an interior design may lead you to perceive a space in entirely unexpected ways.

Throughout Record Interiors 2002, the featured projects all began with existing spaces, where such scenarios played out successfully, but with markedly different results. In two of the interiors, wave forms became essential in redefining the spatial character. At Marmol Radziner's TBWA\Chiat\Day offices, for instance, a veritable two-story tsunami, crafted in wood, surges up in the lobby, channeling views upward within a timber-frame warehouse. The immediate effect is powerful, giving the space clear vertical thrust or focus.

At Klein Dytham's Beacon offices in Tokyo, waves are also present, but in a lower, more attenuated flow. Shaped partly by train tracks beneath the building, the space has long, narrow proportions, which Klein Dytham accentuated with a whimsically undulant and colorful wave, or "ribbon," of functions that traverses the project, giving the entire space a distinct rhythm.

1. Joel Sanders
2. Marmol Radziner
3. Elliott + Associates
4. Klein Dytham
5. Dean/Wolf
6. Yabu Pushelberg
7. Landini Associates

In some of the other projects, reflectivity, rather than wave action, greatly influences the spatial impact. At ImageNet, for example, architect Rand Elliott suspended 18 sheets of clear acrylic, printed with text, between two mirrored walls. With mind-boggling effect, multiple reflections of the viewer and the texts appear to telescope into infinity. Through this optical sleight of hand, the visitor occupies a place conceptually inside the copying process, as the basic principals of photocopying—reflection, repetition, reproduction—are revealed, and ordinary spatial relationships seem momentarily upended.

In Joel Sanders's Lee Residence, hinged mirrors, moving wood panels, and glossy epoxy surfaces play against the shadowy, veil-and-reveal qualities of backlit, sandblasted glass and sheer window shades. Sanders gutted an ordinary city flat, replacing its cramped network of rooms with open space around a single core. The plan yields wide interior panoramic views with dual vanishing points, emphasizing the apartment's now-expansive horizontality. Within this spatial flow, the contrasting surfaces and kinetic panels and mirrors produce a compelling collage effect.

In a SoHo loft, Dean/Wolf Architects responded to remarkable—in places, iconic—urban views by creating a sequence of panels and screening elements that establish an ongoing dialogue with the scene outside, exposing, reflecting, or denying it to the viewer. The cityscape resonates in changing ways throughout the space, not only through images—virtual views—caught in glassy surfaces, but also through material choices that echo the colors, textures, and quality of light outdoors.

And at the Cruise bar and restaurant, Landini Associates places a light sculpture in dynamic counterpoint to a spectacular view, using reflective surfaces to amplify the visual impact.

In the W Hotel, Yabu Pushelberg turned the major flaw of an existing hotel building into a virtue (in this case, using neither waves nor reflections). Here, a once-awkward collection of detached spaces is no longer perceived as such. Instead, the configuration becomes a bento-boxlike array of compartmentalized offerings, contrasting in scale, hue, texture, and function, yet together forming a balanced whole.

The way we experience anything is, of course, related to who we are and what we bring to it. But clearly architects and designers can also play significant roles in uncovering, paradoxically, vast possibilities in finite places. ■

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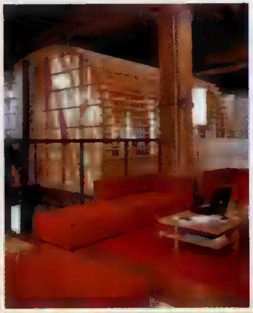

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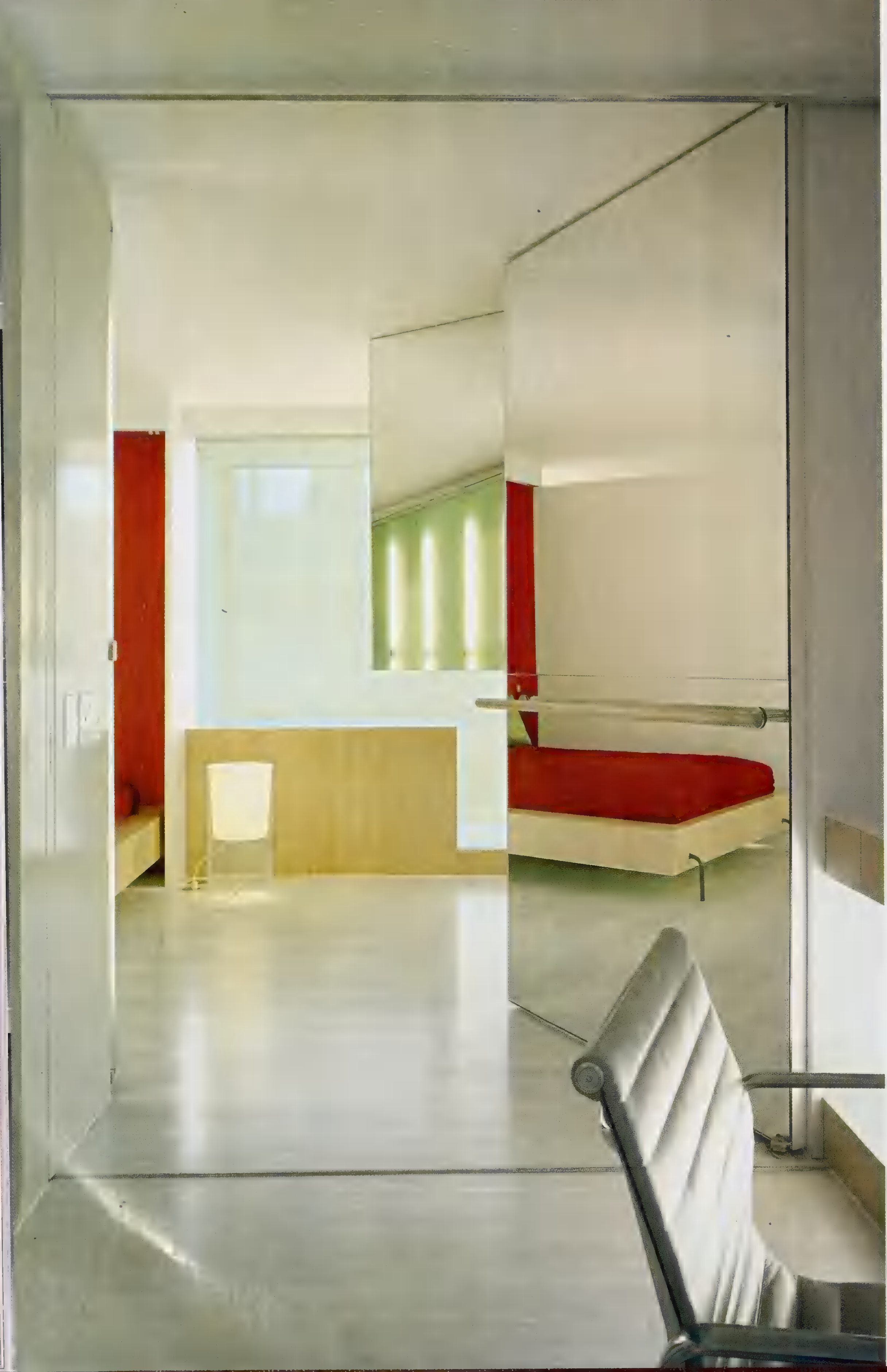


Within a play of mirrors and hinged planes, a fold-out guest bed is partially revealed (this page). From the entrance, a closet's contents and the activity in a shower stall—conventionally hidden realms—may appear through veils of translucent glass (opposite).

Blurring boundaries between hidden and revealed, work and play, Joel **Sanders** fashions the highly flexible **LEE RESIDENCE**

By Raul A. Barreneche

New York architect Joel Sanders denounces many of the accepted norms of domesticity. He is right to try to shake off now-outdated notions of the home—modern life is increasingly fluid, flexible, and full of contradictions and blurry distinctions between work and play, entertainment and recreation. In 1999, the Museum of Modern Art made that case in the successful and provocative exhibition, *The Un-Private House*. The show posited that changes in domestic life and technology are liberating architects and their clients from outdated, centuries-old typologies of rigidly programmed cellular rooms and inherently private dwellings. One of the 26 house designs featured in the exhibition was Sanders's transformation of a hermetic 1950s suburban ranch into an open, voyeuristic bachelor pad centered on a sunken gym instead of a Lucy-and-Ethel–era kitchen.

That bachelor pad was never built, but Sanders's design for a recently completed Manhattan pied-à-terre puts many of his hypotheses about the modern home into practice. His clients, a Midwestern couple, called the architect after seeing the neatly tailored loft Sanders had created for their son in New York City. Although they had purchased a formal two-bedroom flat in a 1996, 32-story condominium tower, they wanted Sanders to completely transform the 1,850-square-foot apartment with a flexible, unorthodox program that included a dance-practice area for the wife, two convertible sleeping spaces for overnight guests, and a study. Sanders stripped the place—which he found to be a rabbit warren of small, awkwardly laid out rooms—down to its concrete shell. His transformation starts with the unexpected exposure of traditionally private areas and concealed infrastructure. The front door now opens onto a tiny vestibule defined by a closet to one side and, surprisingly, the acid-etched glass curve of the master shower on the other. The entry fronts another translucent glass wall thinly veiling the contents of the master closet. This glazed wall extends deeper into the apartment, enclosing a utility closet and a guest shower and offering more provocative peeks at domestic functions.

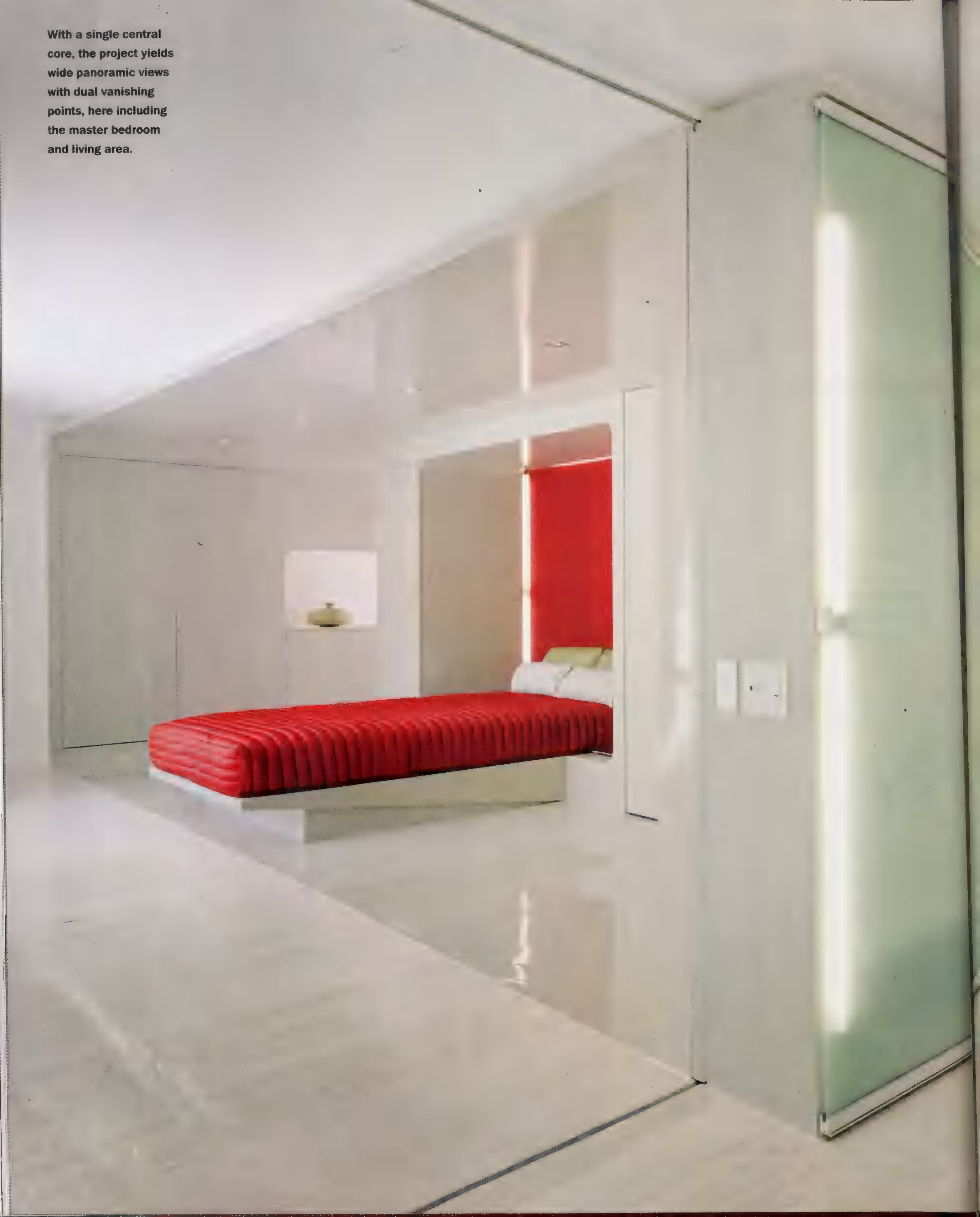
The translucent wall forms the back edge of the master suite, a self-contained zone—conceived as a glass box or a crystalline tea house—that Sanders inscribed into an otherwise open, loftlike space. The boundaries of the box are delineated by its surfaces: the glass wall on two sides of its exterior and a seamless continuum of slick epoxy floors, walls,

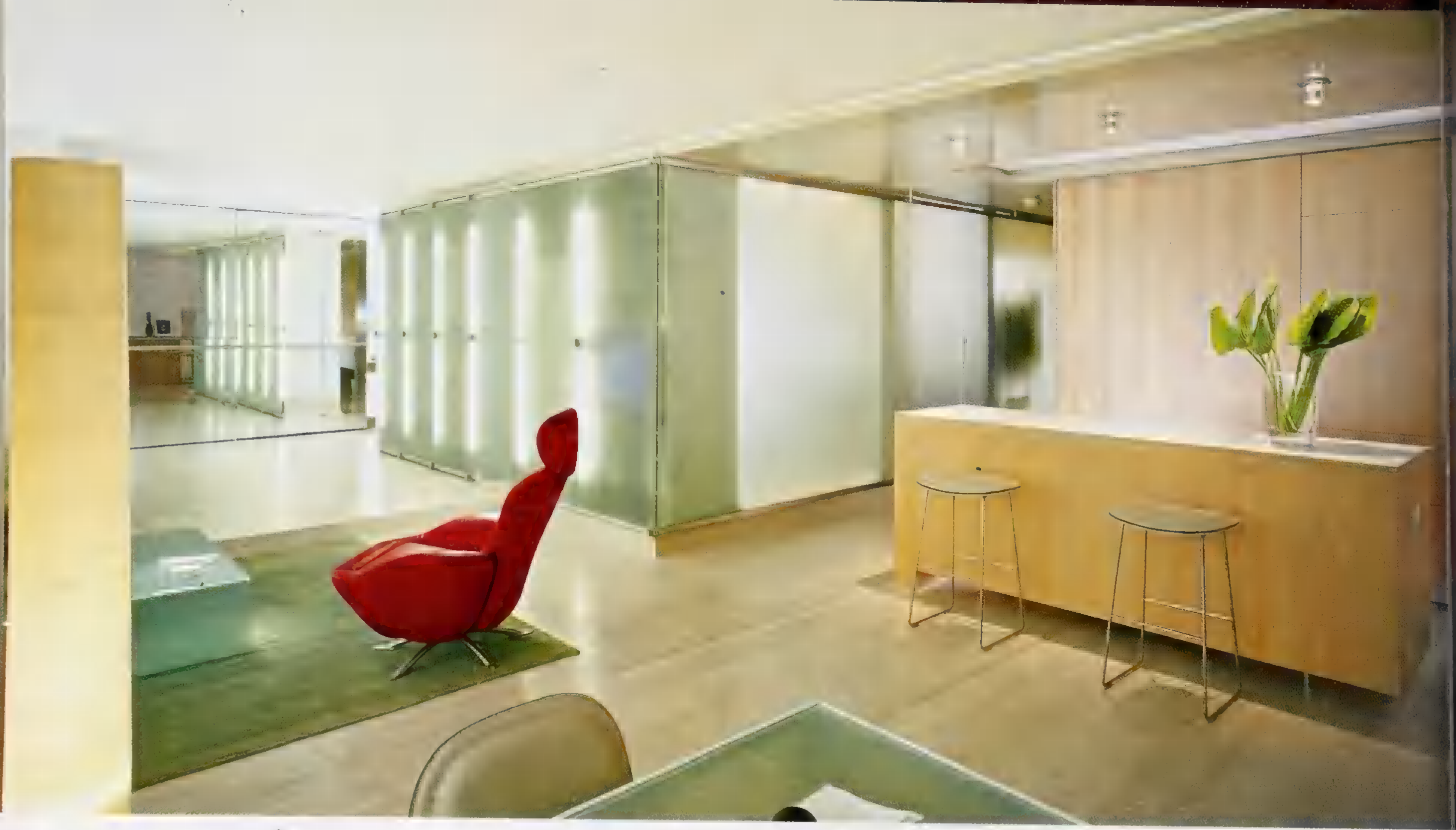
Raul A. Barreneche is a New York–based contributing editor for RECORD.

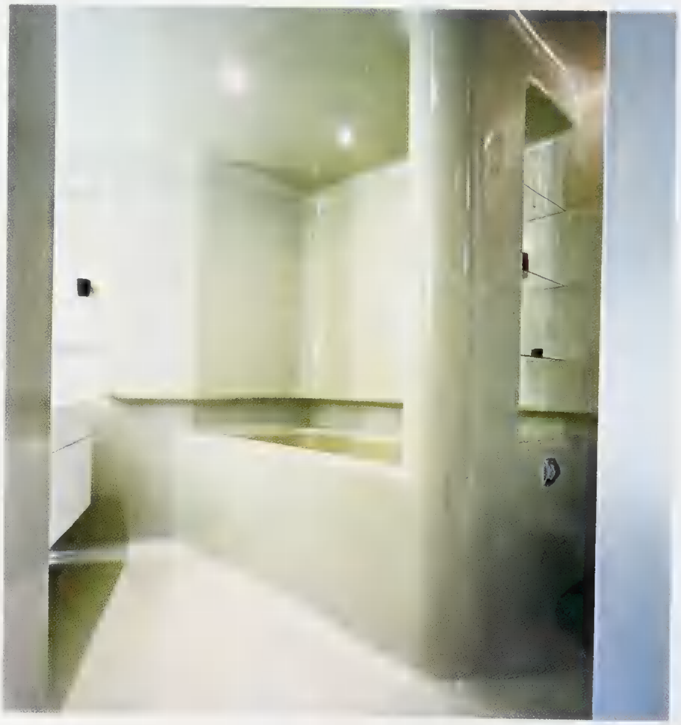
PHOTOGRAPHY: © PETER AARON/ESTO

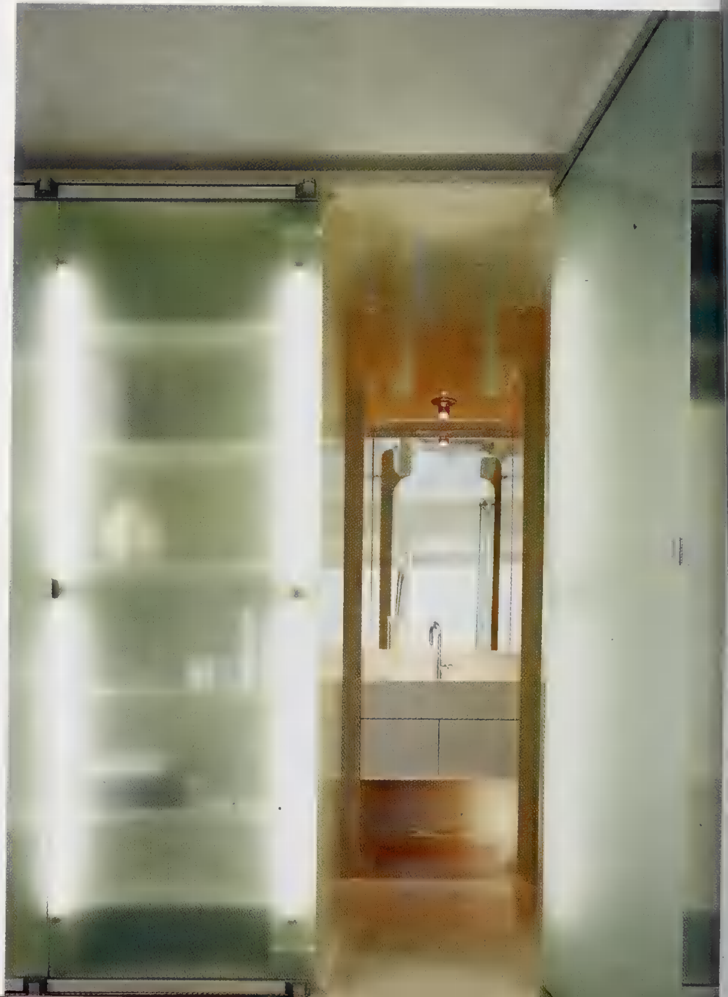
Project: *Lee Residence*
Architect: *Joel Sanders Architect—Joel Sanders, principal; Brian Kimura, project architect; Adam Dayem, Christophe Mueller-Rosellius, Charles Stone, project team*
Interior designer: *Andy Goldsborough*
Engineer: *Jack Green Associates*
Lighting: *Lighting Collaborative—Lewis Herman*
General contractor: *Foundations—Saif Sumaida*

With a single central core, the project yields wide panoramic views with dual vanishing points, here including the master bedroom and living area.



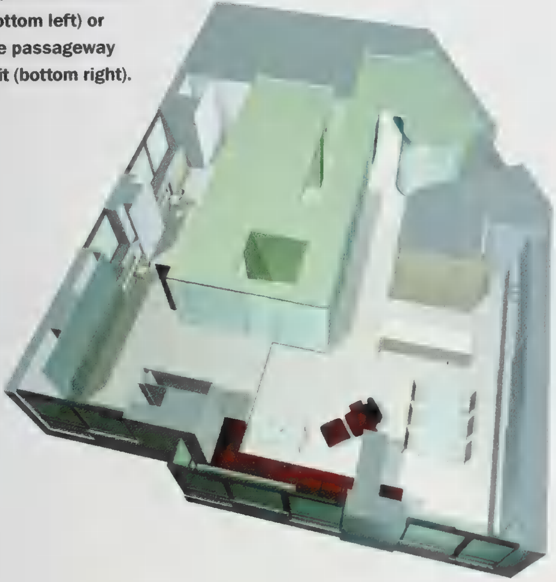


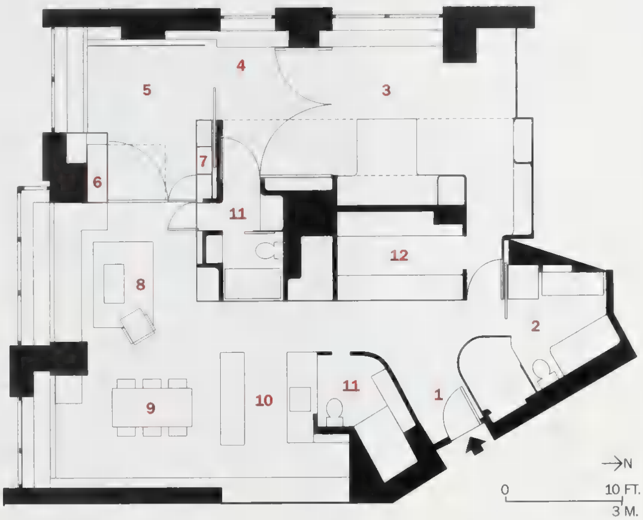




A ballet barre backed with mirrors forms an end wall for the living room (top). Like a luminous sculpture, glass-fronted cabinets glow with vertical fluorescent bulbs (right and top). Epoxy seamlessly lines the master bathroom and its curvy molded tub (above).

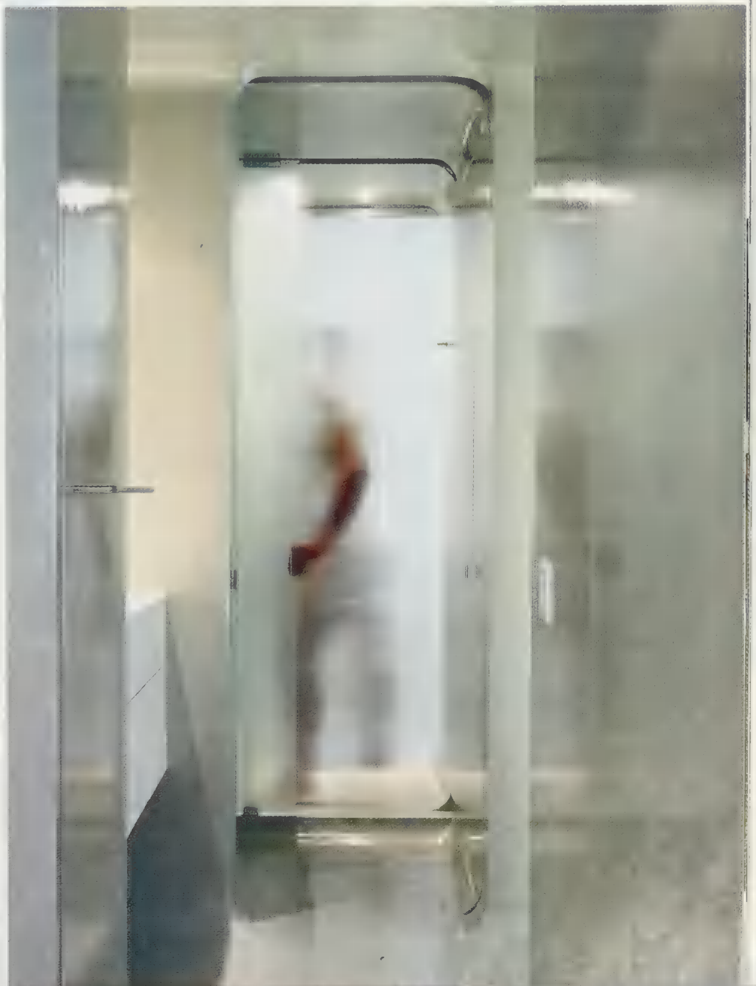
Around the central core, the space remains open and fluid (below). In the guest bathroom, the shadow of a figure may appear from within the shower stall (bottom left) or from the passageway behind it (bottom right).

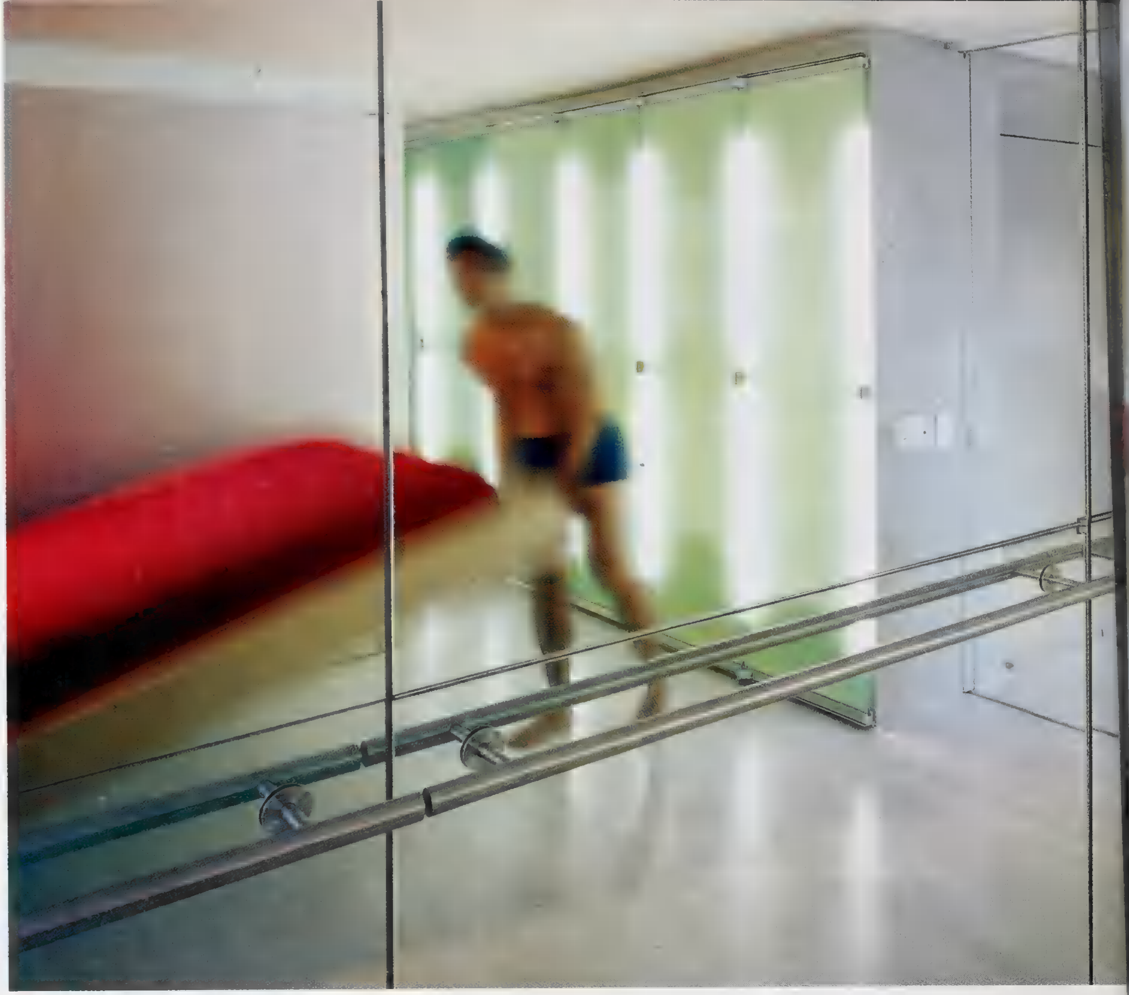




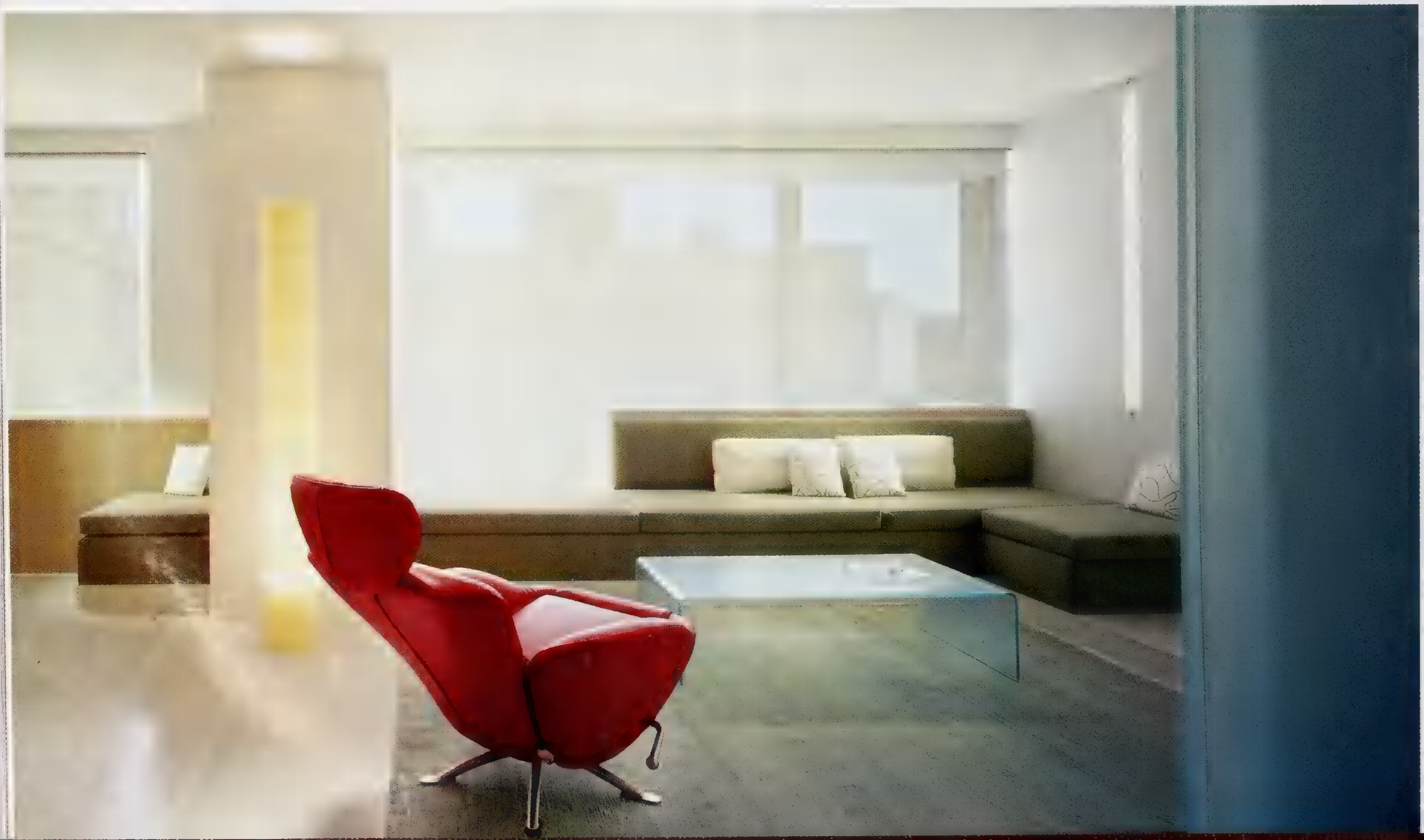
FLOOR PLAN

1. *Foyer*
2. *Master bath*
3. *Master bedroom*
4. *Study*
5. *Ballet barre/mirror*
6. *Fold-out guest bed*
7. *Fluorescent-lit cabinets*
8. *Living*
9. *Dining*
10. *Kitchen*
11. *Bath*
12. *Closet/dressing*





The mirrored ballet-practice area catches reflections of the master bed and the fold-out guest bed (right). Simple custom seating plays against veiled views of the cityscape (below). The study occupies a zone poised for transformation through movable panels (as captured in a time-lapse image, opposite, bottom).



and ceilings inside. Sanders's treatment of the core and its contents is a complete inversion of expectation: Prosaic objects, such as brooms and coat hangers (not to mention bathing bodies), are exposed. And unlike a traditionally opaque core, this translucent nucleus emanates light.

Crafting the epoxy bathrooms and getting floors, walls, and ceilings smooth and seamlessly joined proved to be one of the project's most difficult challenges. Part of the complexity resulted from the different surface compositions: The floors are poured epoxy, but the walls and ceilings are constructed of waterproof green board covered in plaster and finished with epoxy paint. To ensure accurate construction of curved connections, Sanders sent the contractor, Saif Sumaida, a series of section cuts taken from a computer model of the apartment. Sumaida used this detailed data to handcraft, in green board, curved joints between walls, floors, and ceilings, which he smoothed over with plaster and finished with epoxy paint to match the adjacent surfaces. In the master bath, the contractor also integrated a custom fiberglass tub into the fluid epoxy landscape.

Beyond the box, Sanders turned the once carved-up apartment into a continuous space that flows from open kitchen to dining room to living room. Up a short step, the sequence gives way to a mirrored area where the wife, a ballet enthusiast, can practice. (The added depth of a resilient, professional-grade wooden dance floor necessitated the level change.) Although Sanders didn't impede flexibility with functionally specific rooms, he did imply distinct uses through different materials in the otherwise neutral interior: Corian suggests wet (kitchen) functions, upholstered surfaces are for lounging, and so on. "Surfaces allow functions to take place," explains Sanders. "It's counter to the idea that anything can happen anywhere. Like clothing, surfaces create identity."

One of the apartment's most ingenious elements is the complex choreography of moving doors that can slyly turn Sanders's configuration for a one-bedroom flat into an impromptu three-bedroom unit. It's similar to Gerrit Rietveld's play of sliding panels and folding screens that delineate bedrooms within the open upstairs of his seminal Schroeder House of 1924. In the dance studio, a large door pivots open to reveal a Murphy bed and partially close off the space from the living area; a translucent glass closet door on the opposite wall completes the enclosure. A pocket door then slides shut to separate the newly created "guest room" from the master suite. If the owners have another overnight visitor, they can pivot the large closet door next to the master suite's built-in platform bed and open a second door, flush with the opposite wall, to complete the separation from the foreshortened master bedroom. This area also doubles as a private study. The only glitch is that guests must enter and exit the third bedroom through the guest bathroom.

These overlapping, mutable "rooms" are an ideal strategy for creating flexible and efficient interiors, especially in small spaces. Sanders's design is a thoughtful and subtle improvement on the unprogrammed loft. The mix of openness and flexibility is well-suited to its clients—and to the age of the multitask home. ■

Sources

Epoxy: *Hoffman Floor Covering (poured floor; paint on core walls and ceilings)*

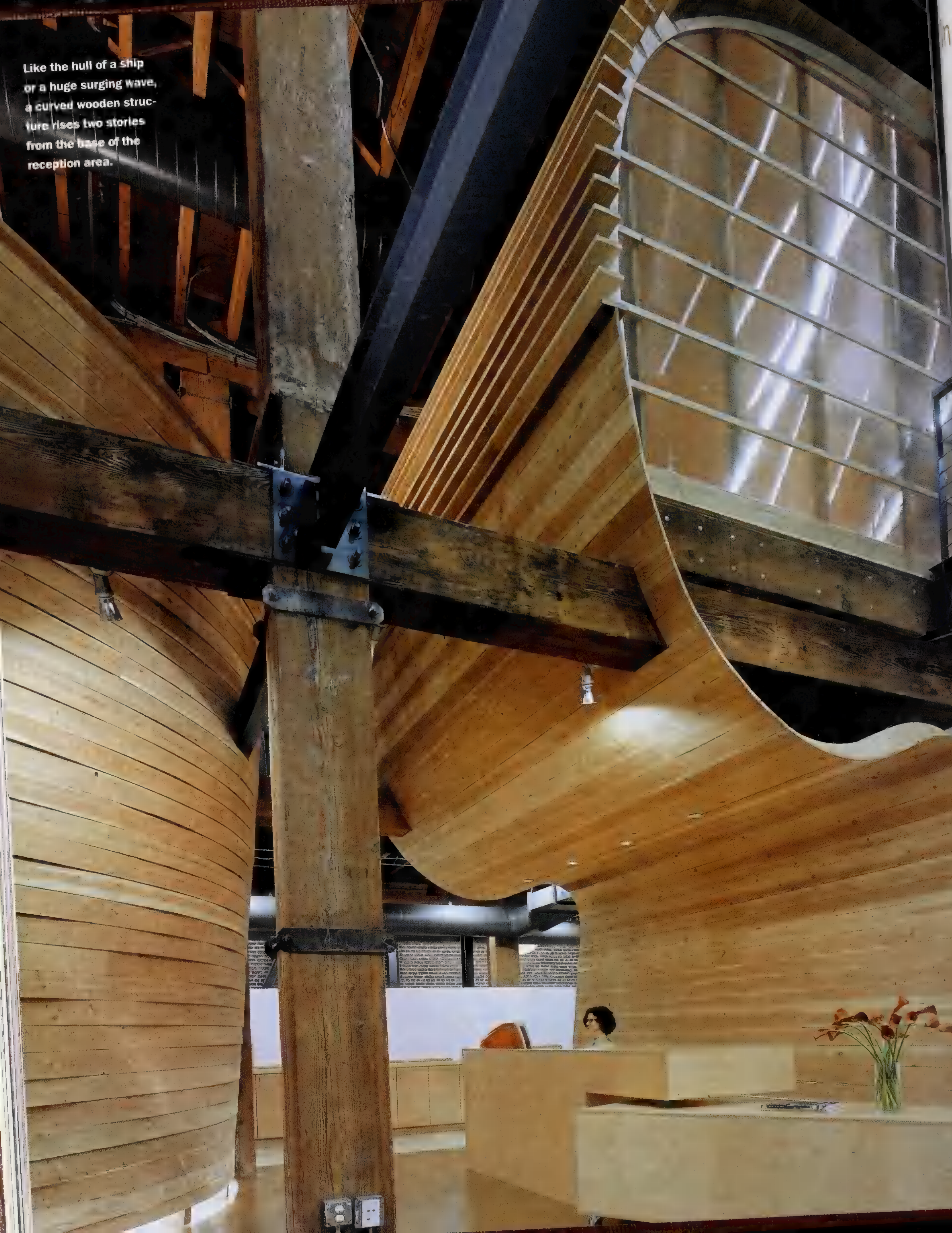
Lighting: *Wever & Ducre*

Plumbing: *Duravit (toilets); Corian (sinks); Dornbracht (faucets and showerheads)*

Wood: *Brushed powder-coated, quarter-sawn oak (cabinets and floor)*

Wall covering: *Gretchen Bellinger, Two Eyes Have Thorns Upholsterer, and K. Flam Associates (headboard collaborators)*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.



Like the hull of a ship or a huge surging wave, a curved wooden structure rises two stories from the base of the reception area.

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In an old warehouse near the San Francisco Bay, **Marmol Radziner** inserts seaworthy curves, launching new offices for **TBWA\CHIAT\DAY**

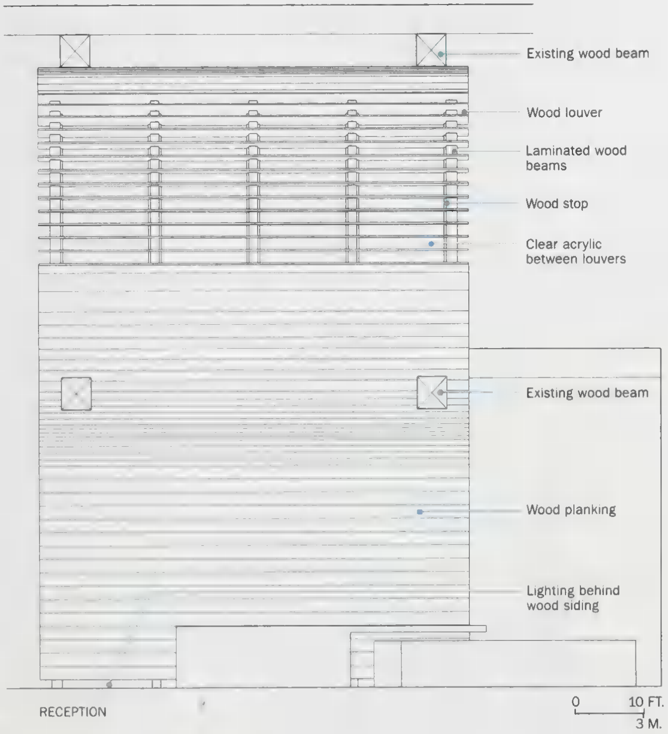
By Lisa Findley

The skull-and-crossbones flag snapping in the wind above an 85-year-old, four-story warehouse on San Francisco's old Barbary Coast suggests the headquarters of bloodthirsty pirates. The only outlaws here, however, are the creative employees of the once-maverick ad firm of TBWA\Chiat\Day, occupying a space recently completed by Marmol Radziner + Associates of Santa Monica, California. Though much of the industry has moved to match the radical style of TBWA\Chiat\Day, the firm continues to outpace them all—in part by maintaining a tradition of hiring fresh-thinking architectural talent, such as Frank Gehry, to design its workplaces. The company's new San Francisco offices are no exception.

Here, the client charged Leo Marmol, AIA, and Ron Radziner, AIA, with giving the 25,000-square-foot space a unique sense of identity, while encouraging exploration and dialogue among the 40-odd employees, even between such disparate departments as accounting and "creatives." Since the lease extends only through 2006 and San Francisco's office market tends to be volatile and pricey, TBWA\Chiat\Day capped the budget at about $100 per square foot for this ambitious project, including furniture.

As the architects sought inspiration for the design, colorful stories of the Barbary Coast's Gold Rush heyday captured their imaginations. They invented their own tale about the building, envisioning it filled with the detritus of washed-up shipwrecks, its floor torn by receding flood waters. This scenario led Marmol Radziner to create an oddly mysterious place with the peaceful repose of a ruin and the golden warmth of natural, fairly unrefined materials. A strange, dreamlike "memory" resonates in the final results and matches the architect's desire to encourage curiosity about the space, leading people to explore it. At the same time, the nautical references take on an abstract quality, avoiding pastiche.

The project's identity is clear from the entry. A huge, upwardly curving wall of rough horizontal boards, recalling a fragment of a wooden ship's outer hull, draws visitors through the lobby, past waiting-area seating, to the reception desk. Here, the upper floor has been cut away to reveal other curving laminated forms, which suggest the ribs of oddly configured ships. Only partially visible overhead, these elements form the structure of translucent polycarbonate-lined conference and project rooms on the second level. In special areas, such as a lounge, the floor is covered in cork, while elsewhere its finished surface is sealed, construction-grade plywood.

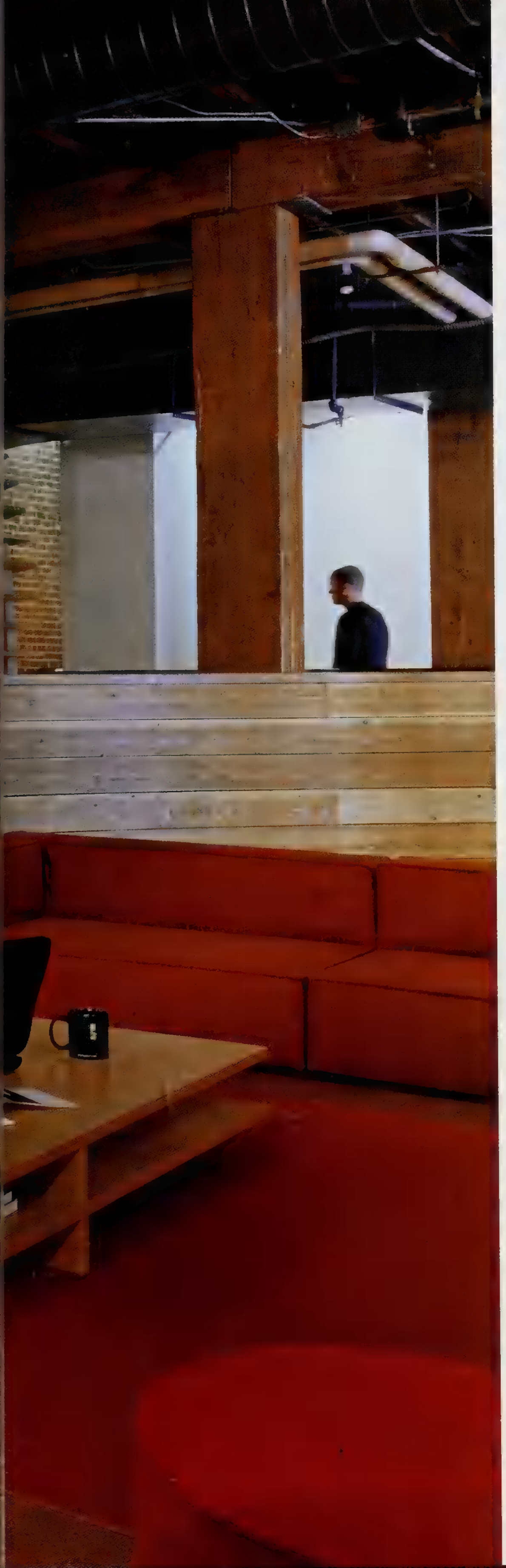


Beyond a custom-crafted plywood reception desk lurks a creative world, hidden from the visitor's view. In this realm of advertising invention, forms straighten out a bit. Marmol Radziner wisely exercised reserve in its design of the work areas. The two floors of office space follow mostly an open plan, where custom-built plywood stations stand in neat orthogonal rows. Dividers are kept low, providing privacy and enclosure to those seated, and long views to the windows for anyone standing. Warm incandescent lighting emanates overhead from rice-paper lanterns, a distinctly noncorporate gesture and a nod to the Pacific Rim.

The lounge is complete with a pool table and small seating areas for casual and creative conversations. In the basement, electronic equip-

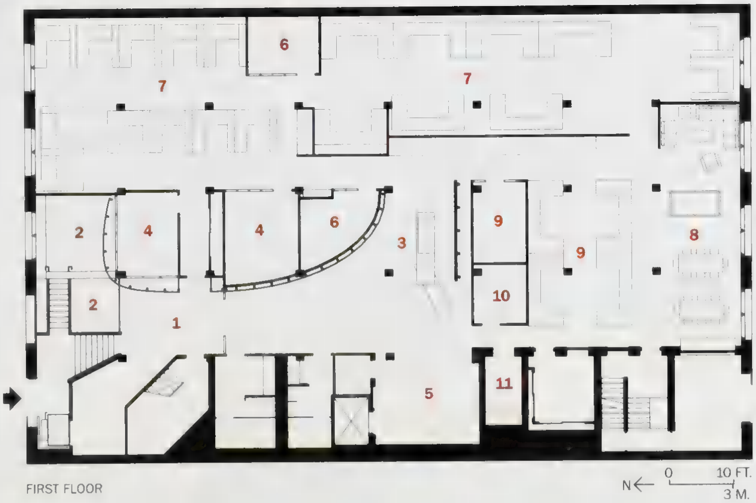
Contributing editor Lisa Findley practices architecture in Oakland, Calif., and teaches at the California College of Arts and Crafts.

Project: *TBWA\Chiat\Day, San Francisco*
Architects: *Marmol Radziner + Associates—Leo Marmol, AIA, managing partner; Ron Radziner, AIA, design partner; Anna Hill, project manager; John Kim, Su Kim, Brendan O'Grady, project architects; Paul Benigno, Juli Brode, Patrick McHugh, Chris McCullough, Daniel Monti, Bobby Rees, Renee Wilson, Annette Wu, project team; Michael Holte, furniture coordinator*
Engineers: *Tipping Mar and Associates (structural); Thermal Mechanical (mechanical)*
Consultants: *John Brubaker (lighting); Mike Landolina (project manager)*
General contractor: *CIC Associates*

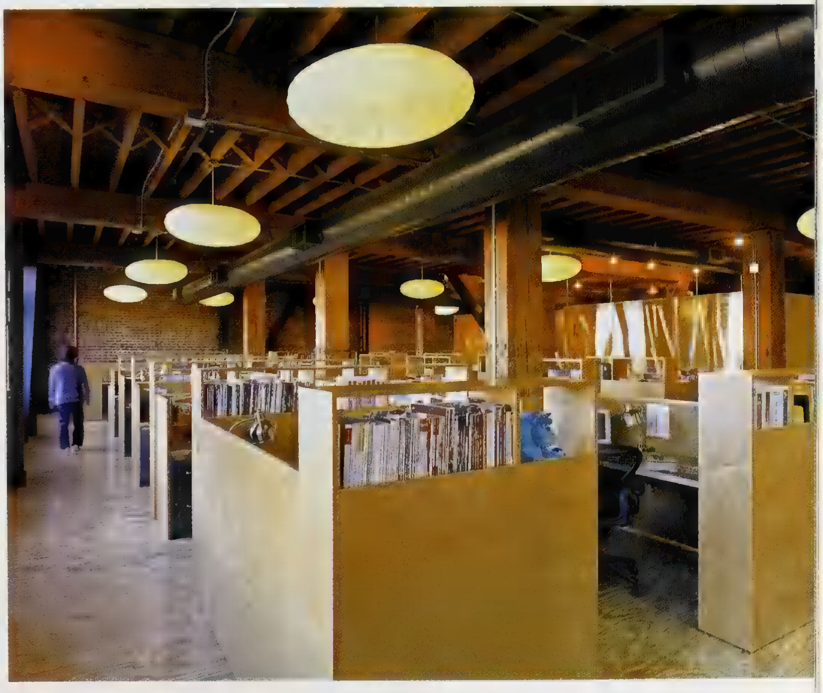


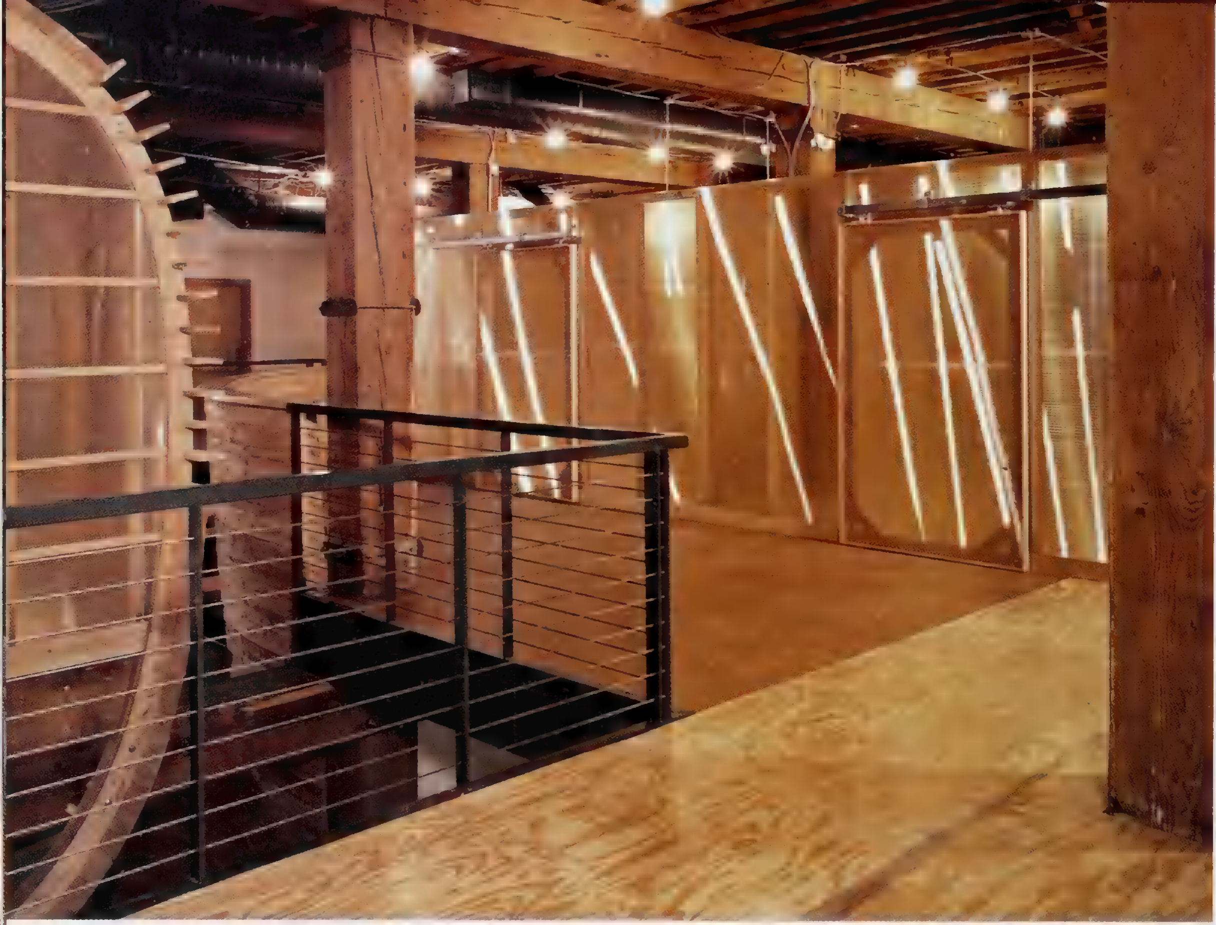
The lounge has an open quality, cork floors, and casual conversation spots. Evoking the ribs of an old ship, the wood structure of an enclosed polycarbonate-lined meeting room rises behind the lounge (left). Delicate rice-paper lanterns hover above the workstations (below).

1. *Entry vestibule*
2. *Open to below*
3. *Reception*
4. *Meeting*
5. *Elevator lobby*
6. *Office*
7. *Workstations*
8. *Play area*
9. *Production*
10. *Viewing*
11. *Kitchen*

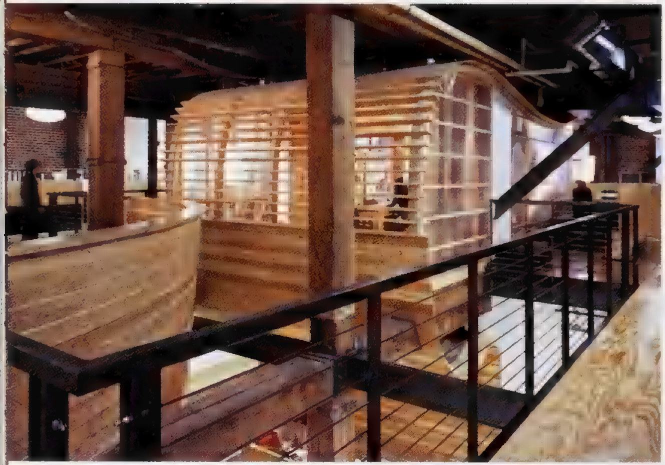


FIRST FLOOR





Warm yet relatively raw materials—plywood and steel cables, as well as jauntily tilted fluorescent bulbs behind polycarbonate sheets—have a visual lightness that plays against the existing warehouse's heavy timbers (this page and opposite).



ment and editing facilities fill dark yet comfortable rooms.

This casual and lively design has a few disappointments—or perhaps they are just the disjunctions of a dream. The natural temptation to move from floor to floor through the reception area's two-story space is denied. All vertical movement happens in the entirely-too-mundane existing elevator and enclosed fire stairs, along one side of the building. Introducing an open stair while complying with fire codes would have yielded a more expensive solution, but the experience of ascending or descending through the great vertical zone might have justified cost trade-offs elsewhere in the project. Perhaps more frustrating, however, is the allure of a potentially fantastic large space within the entry lobby's ship hull—whose belly yields instead a series of conventionally furnished private offices and a storage room. The promise of a vast nautical hold disappears and the illusion, so successfully, if provisionally, constructed, hits the bottom of San Francisco Bay with a thud.

That said, the project still offers a refreshing shift from the high-tech sensibility that has ruled so much contemporary office design. TBWA\Chiat\Day is a recent arrival to the Barbary Coast warehouses, which design firms inhabited as far back as the '60s. Marmol Radziner's use of natural materials and the improvisational character of the construction recall those early days, when tabletops on sawhorses and clip-on lamps were everywhere. In keeping with that experimental spirit, this project shows the advertising renegade continuing to spur architectural investigation. ■

Sources

Paneling: *Polygal (polycarbonate)*
Doors: *Pacific Western; Reed Brothers Security; RMR Construction*
Hardware: *Schlage; Hager*

WWW For more information on the people and products involved in this project, go to Projects at ***architecturalrecord.com***.

Between two mirrored walls, 18 sheets of clear acrylic recount the history of photocopying and of ImageNet. The effect is like fun-house reflections, telescoping into infinity.

Elliott + Associates turns a former 1920s car dealership into **IMAGENET**, an innovative copy shop—and through inspired design, spins the company's tale

nan typewriter repair shop called South
Typewriter Company. Bobby Roberson starte

By David Dillon

The ImageNet copy center in Oklahoma City is a setting, a story, and a metaphor. As in several earlier projects, architect Rand Elliott, FAIA, has enlisted ordinary materials and inexpensive construction to create an engaging portrait of an innovative company. His design reveals what ImageNet does, how it does it, where it's been, and where it's going. All this is conveyed through forms and materials derived from the business itself, instead of some a priori notion of style.

The copy center occupies the third floor of a renovated 1920s car dealership on Oklahoma City's Automobile Alley, a broad urban boulevard that is evolving into a technology district. The company has grown from a one-man typewriter-repair shop, founded in 1957 in the owner's kitchen, into a national organization with 350 employees and eight regional offices.

Entering the whimsical lobby, customers encounter three antique typewriters perched on pedestals of white copy paper. The display represents past chapters of the company story, also printed in blue vinyl letters on a nearby door. The room's walls are lined with the same copy paper—390,000 sheets, to be precise—glued to resemble bricks or blocks of stone. The archival-quality reams, which will not yellow, were cut in thirds to reduce weigh. Originally intended to look like lightly troweled plaster, the design shifted course when the cutting machine went haywire and started spitting out odd shapes and sizes. Elliott liked the way these irregularities added texture and shadow, and decided to leave well enough alone.

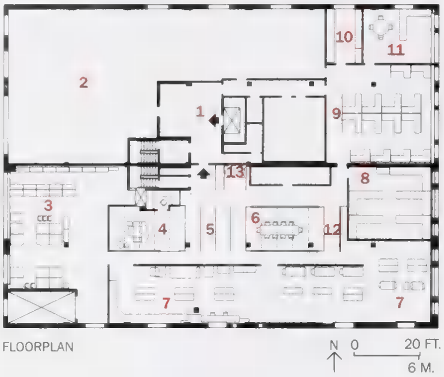
"Sometimes the best things in a design are accidents," he says. "Instead of trying to fix them, you work with them." The result is a spirited dialogue between one and many, light and heavy, words and objects, raw material and finished product. Instead of a place with a desk and a few chairs, the lobby becomes an advertisement, an art exhibition, and a corporate history all in one.

From the zone of the past, customers proceed through a narrow door into the present: a spare white workroom where all of ImageNet's

David Dillon is a contributing editor to RECORD *and the architecture critic of* The Dallas Morning News.

Project: *ImageNet, Oklahoma City*
Architect: *Elliott + Associates—Rand Elliott, FAIA, principal in charge; Brian Fitzsimmons, Associate AIA, project manager; Amberly Russell, intern*

Engineers: *Lingo Construction Services (structural); Jamars & Long (mechanical)*
General contractor: *Lingo Construction Services*



FLOORPLAN

1. *"Paper Wall" lobby*
2. *Existing conditions*
3. *Receiving*
4. *Copying*
5. *"Infinity" panels*
6. *Conference*
7. *Production*
8. *Scanning/imaging*
9. *Data entry/sales*
10. *Storage*
11. *Manager*
12. *Mirror*
13. *"Future" display*

scanning and printing are done. Clients can then make their way to offices and storage areas at the ends of this space; to a glass conference room in the middle; and to an assembly line of copiers and printers along the far wall, where they can watch their jobs being run. The interior is clean, orderly, and efficient, precisely what law firms and other corporate clients with big copying contracts want to see. (ImageNet landed the largest corporate contract in its history soon after the project was completed.)

Yet besides the familiar and the obvious, the workroom contains surprises. Suspended between two mirrored walls are 18 sheets of clear acrylic recounting the history of photocopying on one side and the story of ImageNet on the other. The effect on the viewer is like being lost in a fun house, watching your own image telescope into infinity. All the basic concepts of photocopying—reflection, repetition, reproduction, multiplication—come into play. For a brief moment, you are inside the copying process.

Sitting by itself at one end of the workroom is a four-color digital press—the future—that connects to the Internet and gets its orders from cyberspace. Customers send electronic files directly to the press, where the information is formatted and printed. Such technology enlarges the domain of copying exponentially while eliminating the costly setups that make small printing jobs uneconomical.

At night, the ImageNet offices are bathed in the same blue fluorescent light as the adjacent Vesper building, another automobile showroom that Elliott initially converted into a garage and is about to transform into the home of a sister company for recycling copier-ink cartridges. The blue light, an evocation of the roadhouse and the auto strip, gives the entire block a mysterious glow, as though it were about to levitate.

Elliott won't divulge the budget for this ImageNet project, but $200,000 is a safe guess. He's used to such remarkably low numbers by now. His 1993 World Neighbors Headquarters in Oklahoma City came in at $315,000, and the nearby K.J. McNitt Construction building [ARCHITECTURAL RECORD, October 1998, page 101] cost barely $400,000. Both won National AIA Honor Awards.

All of which proves that a memorable design doesn't have to cost a fortune. Limits make for better architecture, the way nets make for better tennis. The best response to a stingy budget is a bright idea confidently expressed. ImageNet has both. ■

Sources
Windows: *Kawneer (aluminum storefront)*
Doors: *ADS Wood Specialties*
Hardware: *Yale (locksets); Hager (hinges)*
Paint: *Sherwin Williams (latex)*
Doors: *ADS Wood Specialties*
Tile: *Armstrong (VCT)*
Lighting: *Canlet; Lithonia*
Carpet: *Atlas*

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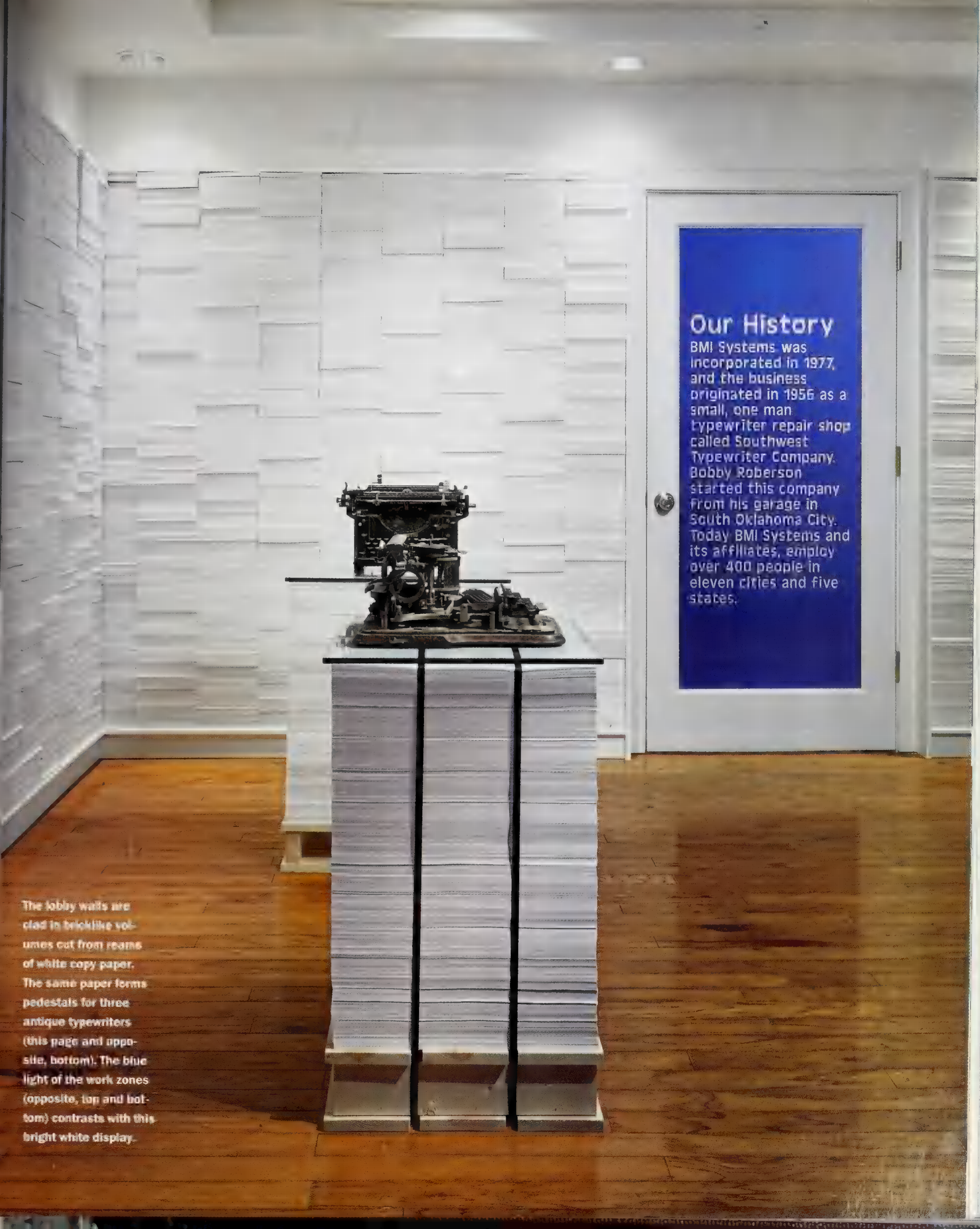
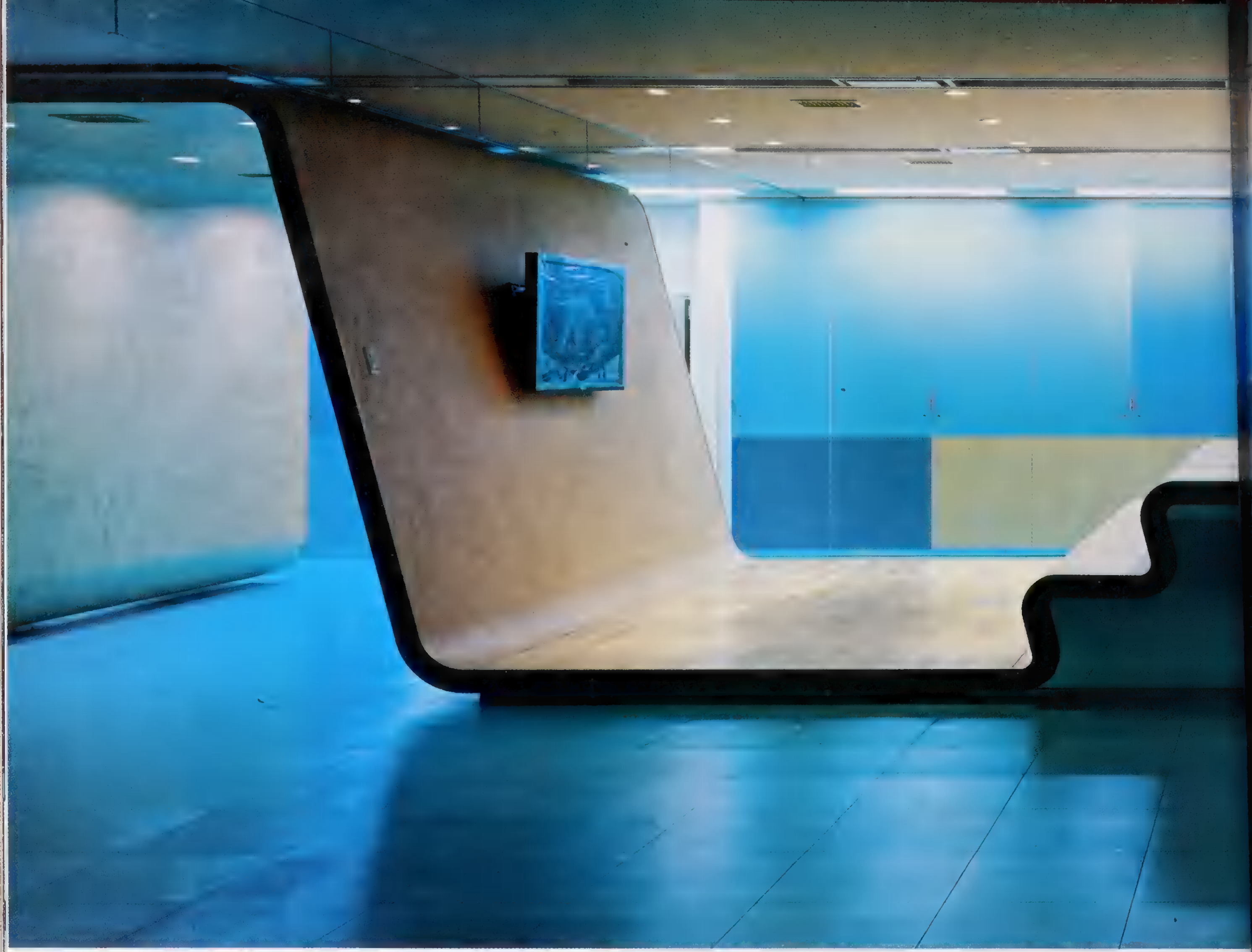

Our History
BMI Systems was incorporated in 1977, and the business originated in 1956 as a small, one man typewriter repair shop called Southwest Typewriter Company. Bobby Roberson started this company from his garage in South Oklahoma City. Today BMI Systems and its affiliates, employ over 400 people in eleven cities and five states.

The lobby walls are clad in bricklike volumes cut from reams of white copy paper. The same paper forms pedestals for three antique typewriters (this page and opposite, bottom). The blue light of the work zones (opposite, top and bottom) contrasts with this bright white display.



Klein Dytham weaves a playful ribbon of color and creative activity through Tokyo's BEACON ad agency

By Naomi Pollock

Architecture and advertising sometimes overlap. But in Klein Dytham's office for Beacon Communications, the two practically meld into one. As attention-grabbing as the flashiest Tokyo signage, the four-floor, 56,300-square-foot office interior, a joint venture among advertising giants Leo Burnett, D'Arcy, and Dentsu, features wild curves and Day-Glo colors. Underlying this visual extravaganza is an office plan that turned the company's inner workings on its head.

The transformation from the standard-issue Japanese layout, with a ring of executive offices around a core of employee desks, began in earnest when the client traded space in Tokyo's staid business district for four stories in a new 17-floor office tower, set amid billboards and neon signs galore. Though this relocation to a mixed-use area on the western side of the city was a move away from corporate clients, it brought Beacon employees closer in body and spirit to the thousands of consumers who flow through the building en route to the subway below or to train and bus stations.

The new location called for a fresh image. More Madison Avenue pitch than programmatic wish list, the client's initial brief likened its office to

Naomi Pollock is ARCHITECTURAL RECORD*'s Tokyo-based correspondent.*

PHOTOGRAPHY: © KOZO TAKAYAMA (TOP SPREAD AND

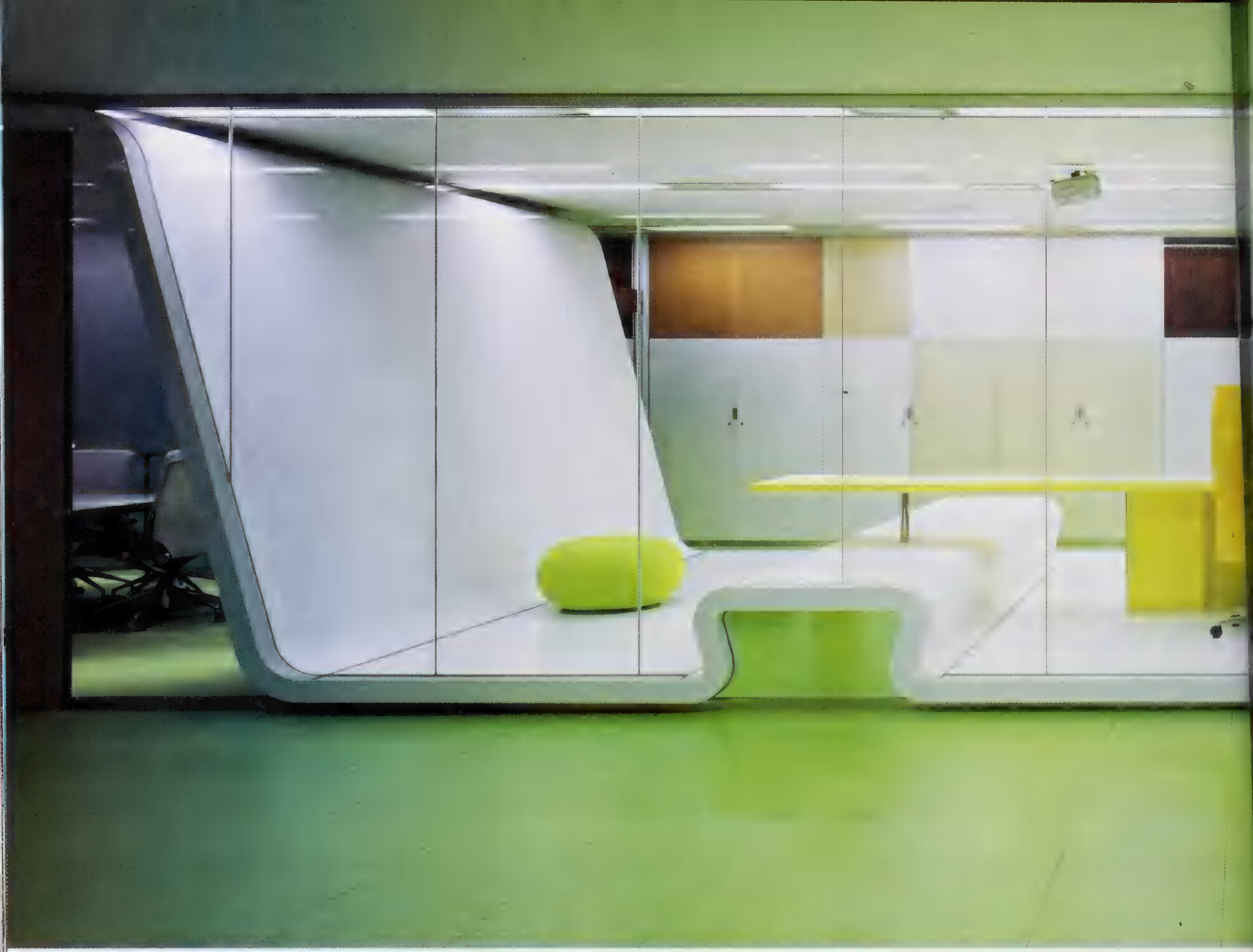
The serpentine "ribbon" transforms itself for diverse functions. In video display areas (opposite), it ripples to become raked seating.

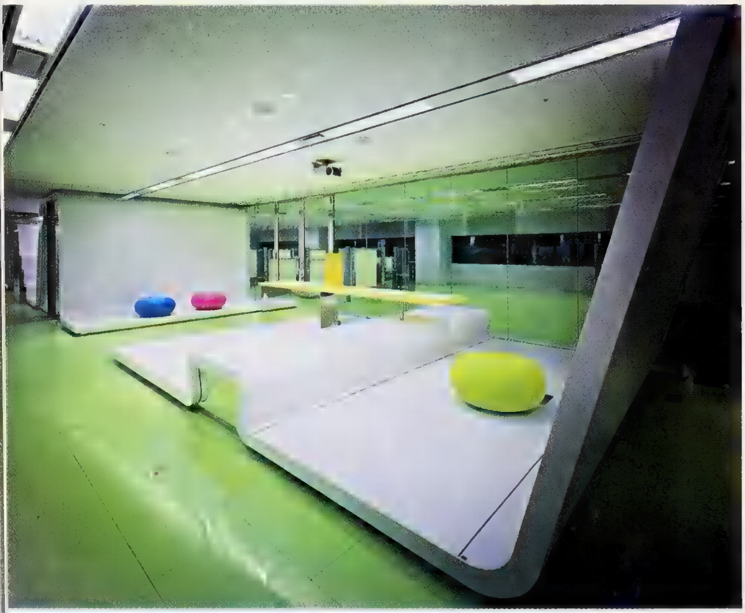
a gin and tonic—an internationally enjoyed drink that is transparent, cool, fizzy, with a twist of lime, and, above all, a splash of alcohol to make it fun.

But the project took on more direction in powwows held at Deluxe, the workspace Klein Dytham architecture (KDa) shares with four other small companies: designers, DJs, and a microbrewery. Inspired by the creative cross-fertilization that occurs when diverse, energetic workers share space, the clients asked KDa to incorporate Deluxe's "base-and-camp" concept of small, individual desks and open, communal meeting areas.

This move led KDa to divide each of the four 56-by-197-foot, column-free floors into open workspace traversed by an undulant 15-foot-wide "ribbon," within which shared functions line up like train compartments. "[Subway] tracks beneath the building make the space long and thin," explains Mark Dytham. "Rather than fight the length, we went with it."

Project: *Beacon Communications Office, Tokyo*
Architects: *Klein Dytham architecture—Astrid Klein, Mark Dytham, Shimpei Tokitsu, Hiroto Kubo, Yuko Iwamatsu; The Design Studio—Stuart Kay, Shoji Koshimizu, Hiroshi Nagakura; DG Jones—John Critchley, Toshikazu Yamamoto*
Lighting: *Koizumi Lighting*
General contractor: *Takashimaya Space Crates (interior); Tokyu Architects & Engineers (architectural)*



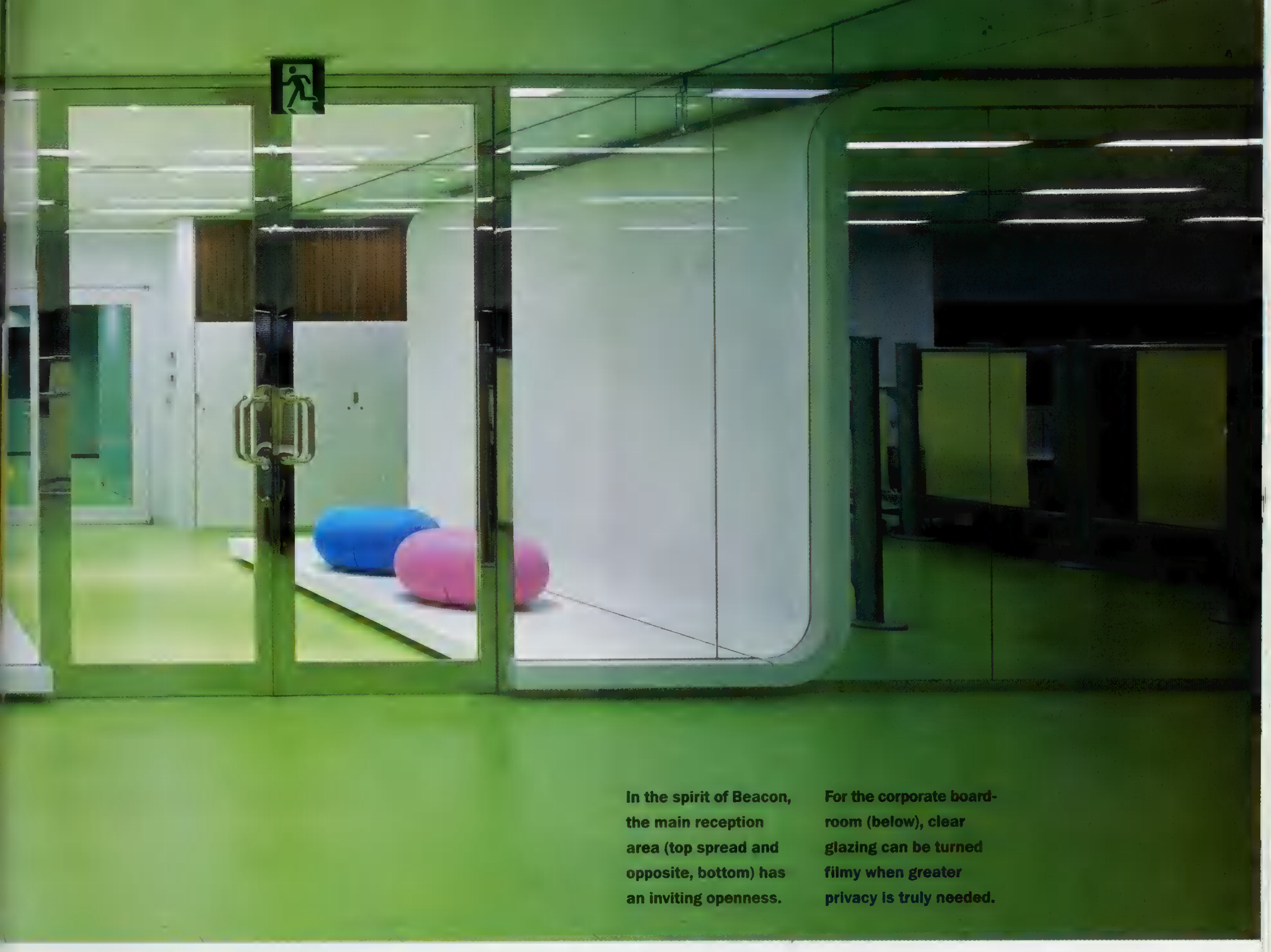


The lowest floor houses reception, management, and support areas, while the other levels are devoted to ad development. For individual workstations, the designers arranged an office system in horseshoe clusters that can accommodate up to 85 workers per floor. Although company directors were willing to forego private offices, KDa did not even give them desks. Instead, each director got the chair of his or her choice, a file cabinet on wheels, and a spot at a collective directors' work area, where any employee can pull up a chair and chat. Clad in white plastic laminate, this station is more kitchen counter than corporate credenza. "Creative people often get ideas when not thinking about work," says KDa partner Astrid Klein. "It's nice if an office can be like a living or dining room, where one feels relaxed."

But when directors or their employees need to form a caucus, conduct a brainstorming session, or just have a private phone call, they can duck into any one of the ribbon's meeting rooms or office support areas. Accessible from either side, each of the four ribbons has a steel frame covered with plasterboard that soars and dips along its length, rising to become the ceiling over a conference room, stepping down to form screening-area seating, or swooping low to provide a platform for a test kitchen.

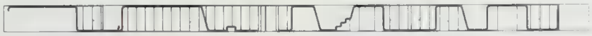
Styled like oversize furniture, the ribbons have distinct profiles adapted to varied functions and surface treatments specific to each floor. Divided into product groups targeting men, women, or families, every

PHOTOGRAPHY: © NACASA & PARTNERS (TOP SPREAD AND

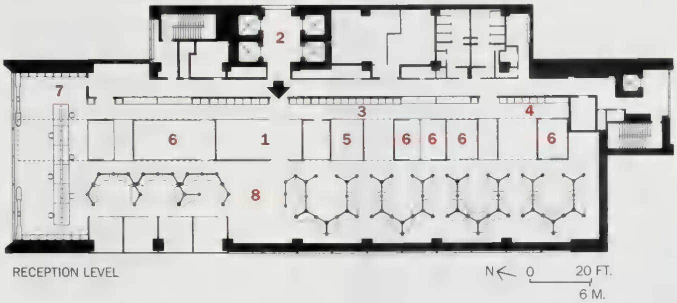


In the spirit of Beacon, the main reception area (top spread and opposite, bottom) has an inviting openness.

For the corporate boardroom (below), clear glazing can be turned filmy when greater privacy is truly needed.

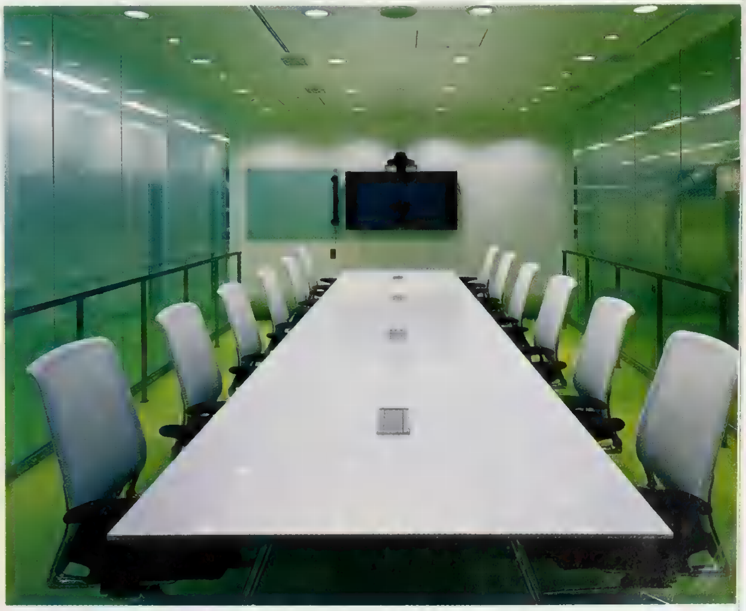


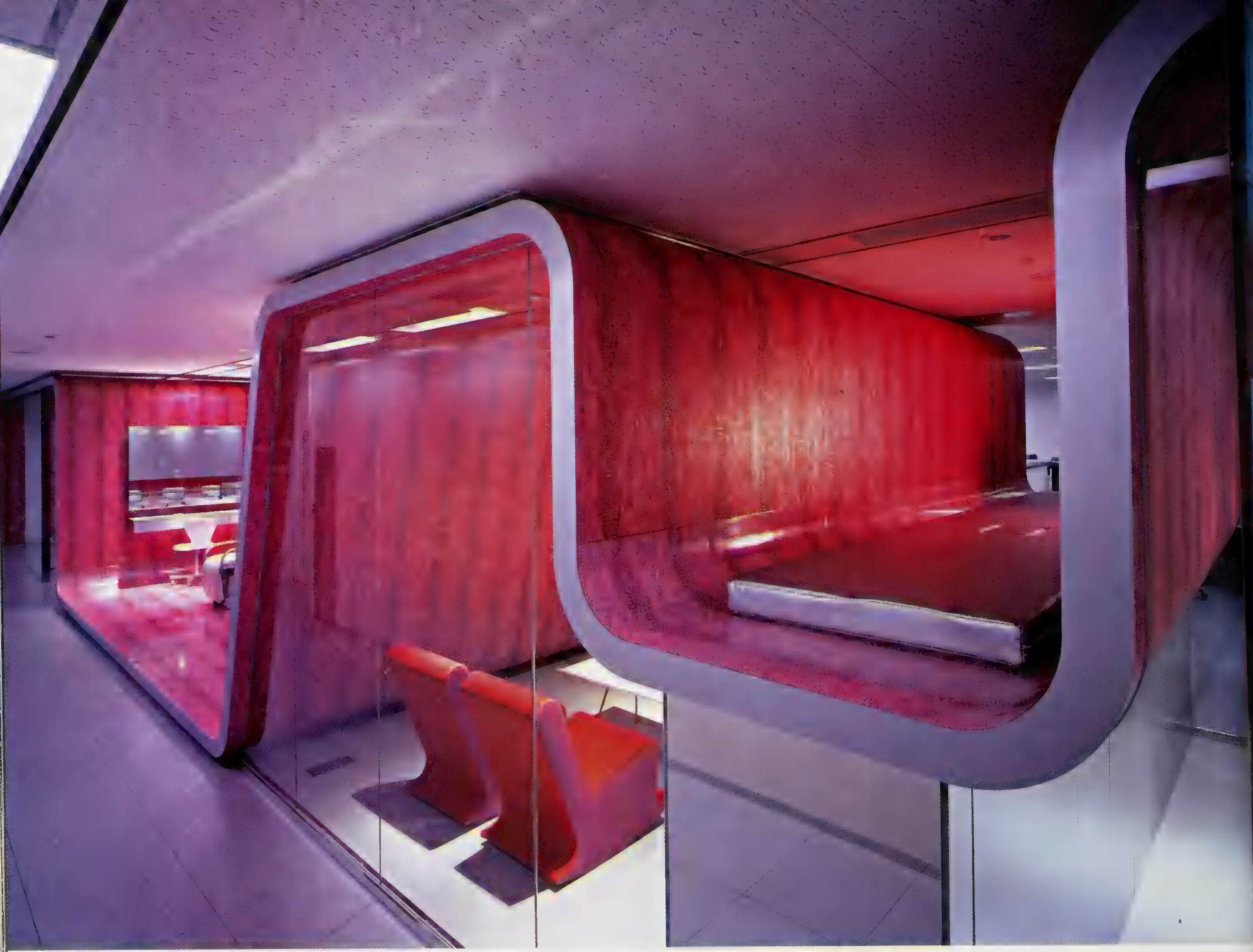
SECTION

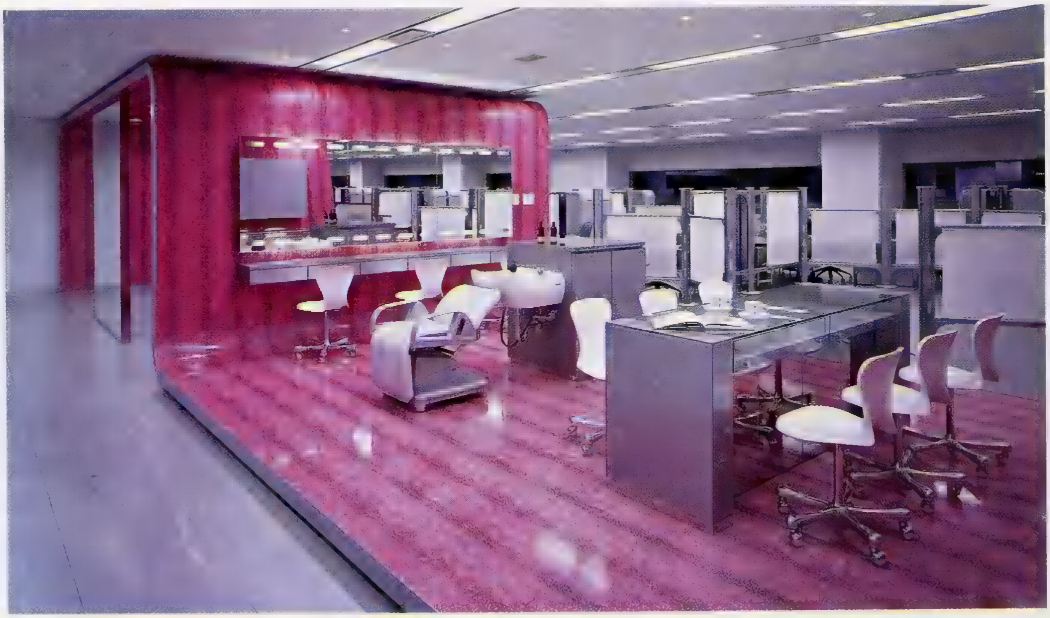


RECEPTION LEVEL

1. *Reception*
2. *Elevator lobby*
3. *Chat space*
4. *Printer center*
5. *Video screening*
6. *Meeting/conference*
7. *Management*
8. *Workstations*







On the women's floor, the "ribbon" bears a pink snakeskin pattern (this page). Here, a bunk —dimensioned like a capsule-hotel unit—provides a nook for relaxed thinking or revitalizing naps. In the salon, employees test products and can also have their hair styled. Warm wood distinguishes the family floor (opposite, top). Casual ball-like seats supplement video-area bleachers (opposite, bottom).

PHOTOGRAPHY: © NACASA & PARTNERS (THIS PAGE AND

creative level has its own visual identity—flirty pinks and curvy forms for women's zones; tough metals and hard edges with shades of lilac (a play on machismo) for the men's realm; warm wood, wholesome wicker, and turquoise for the family market; and chartreuse for management. Though such connotations of color and form might ruffle feathers outside Japan, here the tolerance for stereotypes and sexism far exceeds that of the U.S.

Within these palettes, the architects really went to town. From tatami sitting rooms (for traditionalist clients) to slick corporate boardrooms, there is a place for every mood and occasion—even a beauty salon, which doubles as a product-testing arena and, once a week, as an employee hair salon. Another amenity is a built-in bunk for workers. As Klein observes, "Some people think better when they're horizontal." With no two rooms alike, the furnishings are a veritable catalogue of interior goods—with over 430 different furniture items from Japan, Europe, and the U.S.

Not ones to be contained by national borders, Klein and Dytham, both Europeans, graduated from London's Royal College of Art and arrived in Tokyo in 1988, intending to stay three months. Instead, they ended up working with Toyo Ito until opening their own firm in 1990.

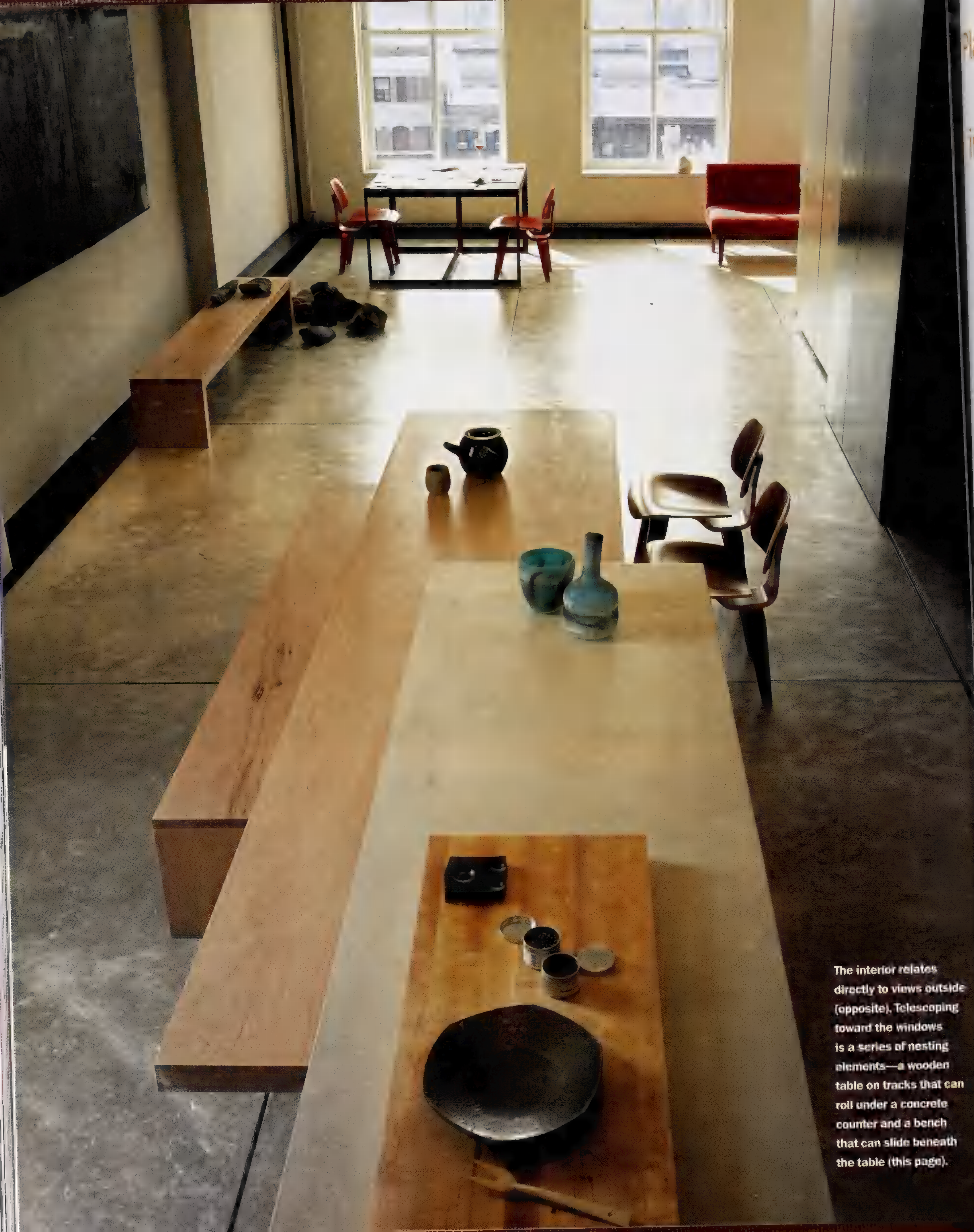
Though KDa now has interiors and new buildings under its belt—including Undercover Lab (2001), a fashion company headquarters in Tokyo, and Vroom (1999), a garage in Nagoya—its Web site, launched in 1995, first put the firm on the map. "We felt remote here, so we collected ads with Western stars promoting products they wouldn't be caught dead selling in the States, and posted them to hook people in," says Dytham. The ads at www.klein-dytham.com weren't about architecture, but their purpose there was to grab attention, as an appetizer for the display of KDa's work.

That site and the media awareness it revealed probably helped the architects land the Beacon job. But it is their personal brand of contextualism that made it a success. "We're a Tokyo office," says Dytham, "and our work is inspired primarily by the energy of Tokyo today, not Japan's tatami and shoji." ■

Sources

Cabinetwork: *Takashimaya Space Creates (built-in wall unit); Knoll (printer/fax storage)*

WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.



The interior relates directly to views outside (opposite). Telescoping toward the windows is a series of nesting elements—a wooden table on tracks that can roll under a concrete counter and a bench that can slide beneath the table (this page).

Placing its **SOHO SKYLINE LOFT** in direct dialogue with N.Y.C. views, **Dean/Wolf** crafts an interior landscape in concrete, steel, maple, and glass

By Fred Bernstein

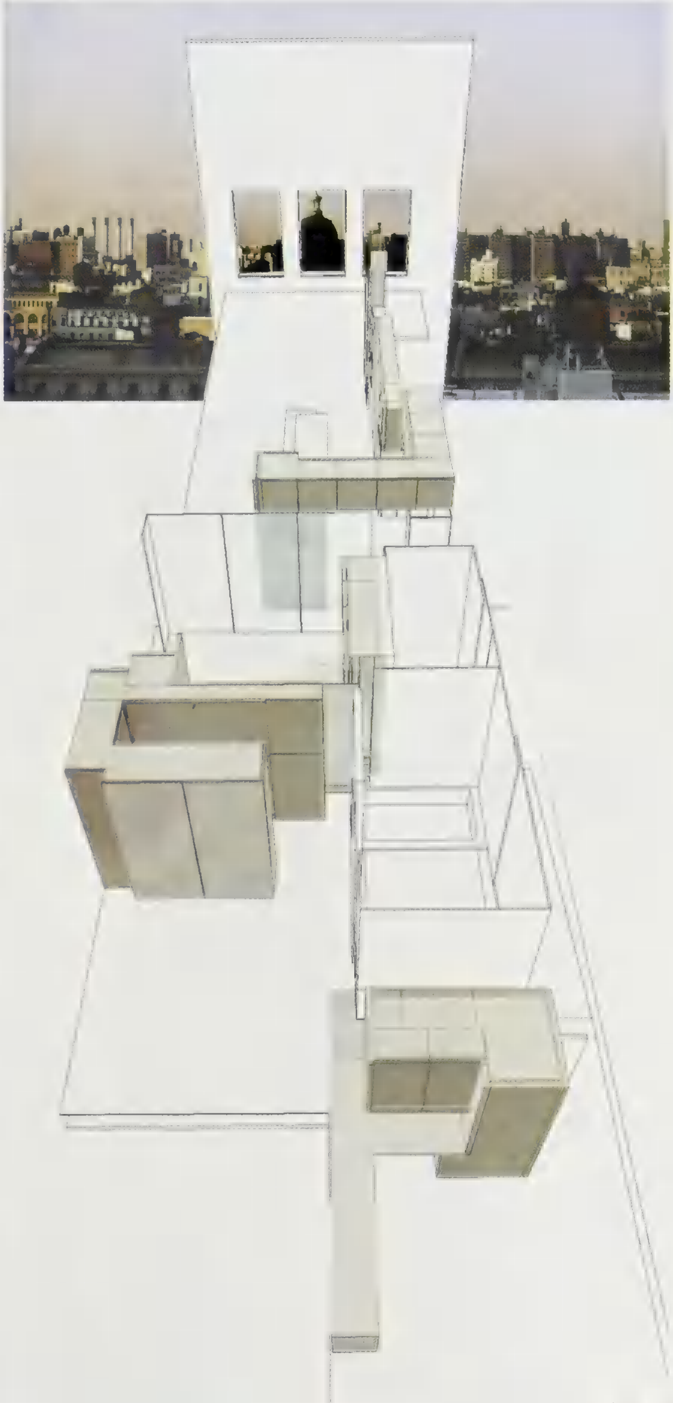
Sometimes urban constraints become powerful generators of form. That was the case when Dean/Wolf Architects recently converted a 10th-floor residential loft in New York City's SoHo neighborhood. The 2,000-square-foot space was five times as long as it was wide, offered no opportunities for vertical manipulation, and had dramatic city views through its double-hung windows but nothing to mediate between this interior realm and the skyscrapers almost two miles away.

The clients, photographer Anthony Gordon and model Martina Gordon, had spent three years looking at lofts—446 of them, the couple claims—before settling on the 20-by-100-foot space. To the architects, that suggested this apartment's apparent limitations had actually been selling points (conscious or otherwise) and deserved to be explored as themes. Notably, the east-west orientation, with windows to the north and east, meant the place would get direct sunlight only in the mornings. Was there a way, the architects wondered, to capture that light, allowing it to penetrate the apartment, and then—even after it had climbed high in the sky—to linger?

The answer, partners Kathryn Dean and Charles Wolf discovered, was to use glass in a variety of forms, combined like puzzle pieces—some of it clear, but most of it back-painted, sandblasted, or textured. As Dean explains, light passes through transparent glass, but translucent glass "holds on to it." Dean/Wolf deployed both kinds in partitions bordering the living/dining room, two bedrooms, two bathrooms, and an office. Transparent "notches" in the mostly translucent walls allow morning light to filter deep into the loft, as if to wake up the couple, their five-year-old son, and the apartment's interior recesses. The treatment of walls and ceiling eliminates any sense that the loft is, structurally, a series of bays, instead reducing the long rectangle to a continuously flowing space, a more neutral condition. The few interruptions are almost

Fred Bernstein studied architecture at Princeton University and contributes regularly to Blueprint, World Architecture, *and* The New York Times.

Project: *SoHo Skyline Loft, N.Y.C.*
Architects: *Dean/Wolf Architects—Kathryn Dean, partner in charge of design; Charles Wolf, partner in charge of construction; Meejin Yoon, project architect; Clark Manning and Maya Weissman Ilan, renderers*
General contractor: *Bando Construction—Jae Lim, Joseph Moon*



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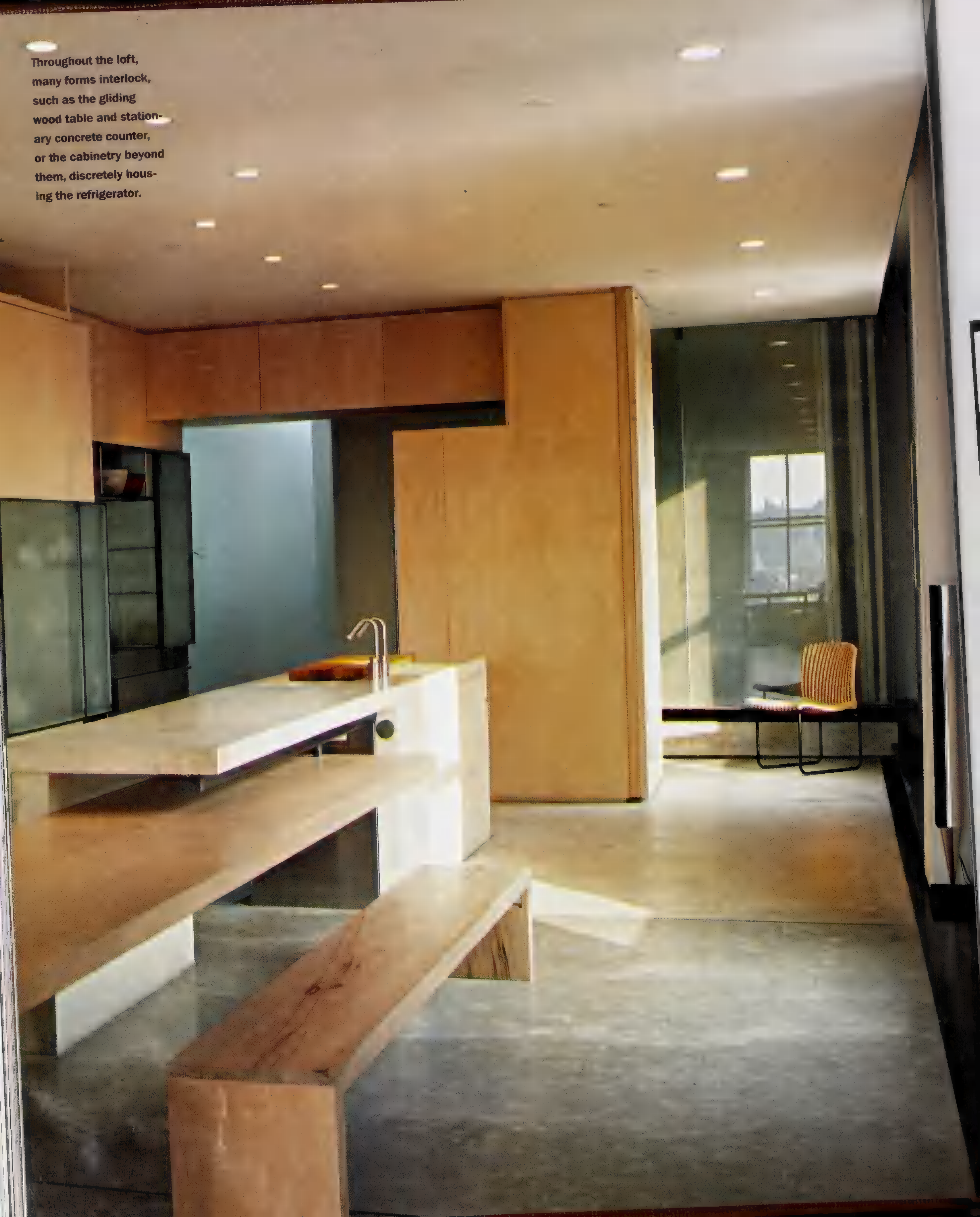
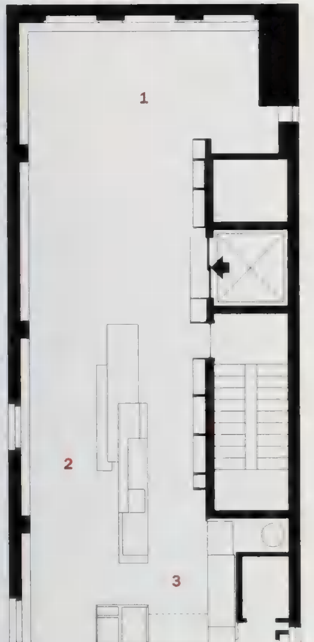
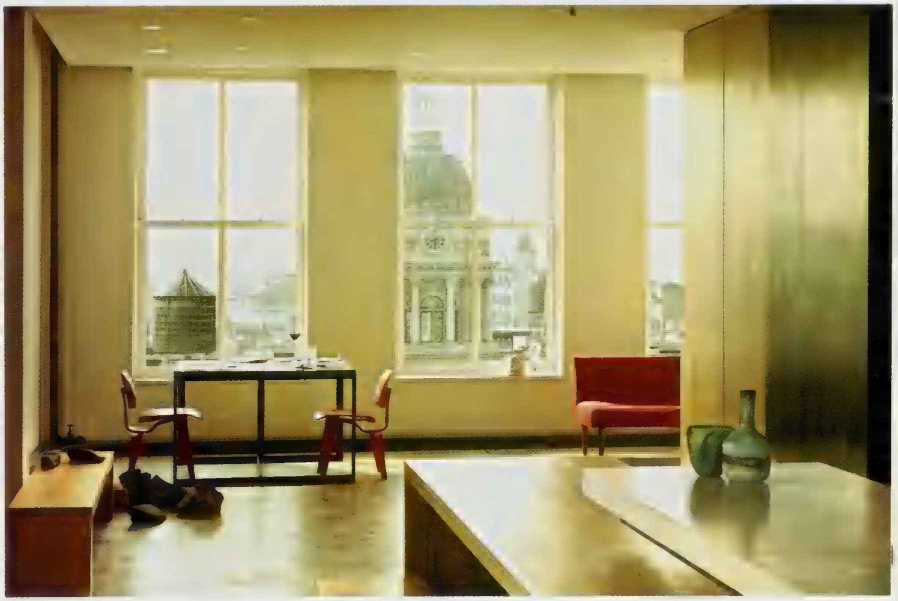


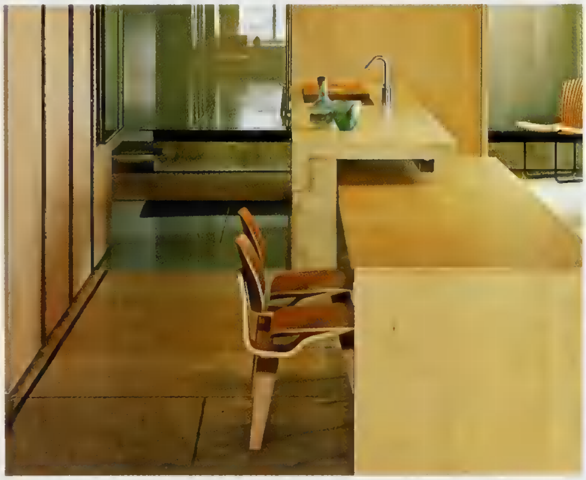
Throughout the loft, many forms interlock, such as the gliding wood table and stationary concrete counter, or the cabinetry beyond them, discretely housing the refrigerator.

1. *Living*
2. *Dining*
3. *Kitchen*
4. *Bedroom*
5. *Bath*
6. *Closet/dressing*
7. *Master bath*
8. *Master bedroom*
9. *Office*
10. *Future window*



FLOOR PLAN



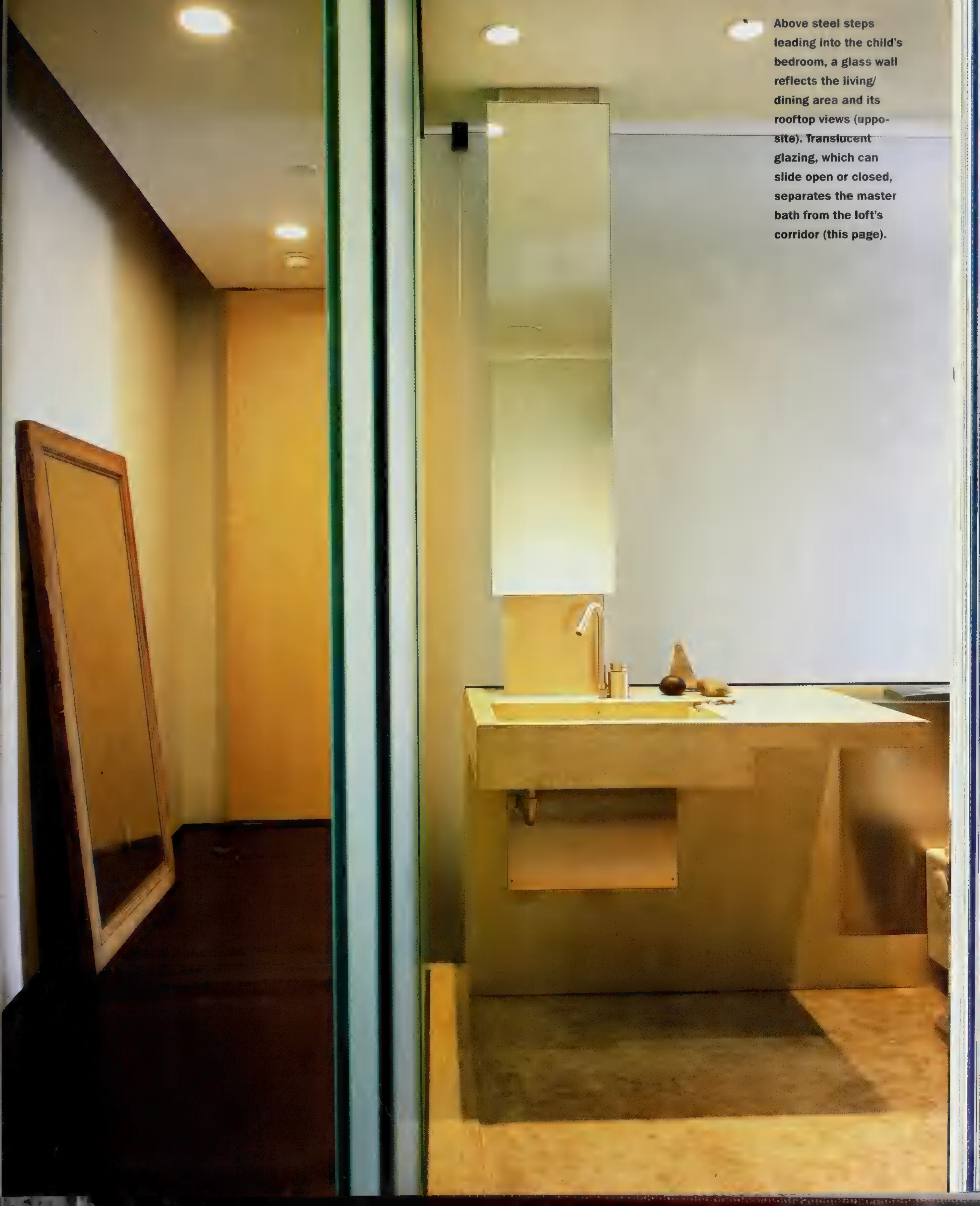


Drawing inspiration from the colors, textures, and light of the surrounding cityscape, the project juxtaposes greenish glass with hot-rolled steel, pale maple, and cast-in-place concrete (this page).

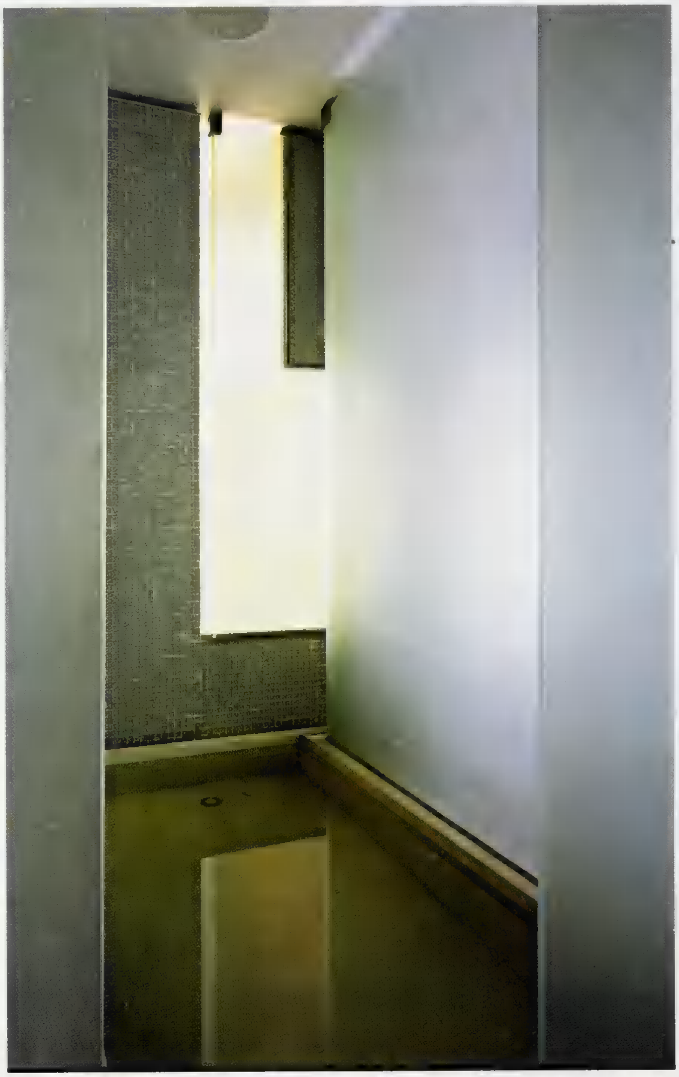
improvisational, with shadows and reflections assuming as much importance as built interventions.

The loft is entered by elevator on the south side of the living/dining room—with the front door opening onto dramatic views of Midtown Manhattan to the north. On the apartment's long south wall, back-painted green glass works functionally, forming cabinet doors and backsplashes, while also reflecting those views. The opposition between the windows and the parallel reflective wall turns a procession through the space into a passage between two skylines—one real and the other virtual—with the iconic Empire State Building on one side and its ephemeral mirror image on the other.

The color of light entering the apartment was key to the choice of materials. As Dean points out, most of the surrounding SoHo buildings are clad in limestone and granite, which reflect gray light into the loft's windows. (Nearby parks or redbrick facades—characteristic features of the adjacent Tribeca neighborhood—would have given the light a richer, more colorful quality, Dean adds.) So the architects chose materials—including hot-rolled steel, subtly yellow-pigmented concrete, and light maple—that would be animated, rather than overpowered, by the intense but pale morning rays. Colors inside echo or balance those outside. Ethereal as it may seem, the design is also highly



Above steel steps leading into the child's bedroom, a glass wall reflects the living/dining area and its rooftop views (opposite). Translucent glazing, which can slide open or closed, separates the master bath from the loft's corridor (this page).



tactile, with concrete poured in place to form an astonishing series of fixtures: Tubs in the two adjoining bathrooms are seemingly carved out of one volume. It's as if a fragment of Peter Zumthor's spa at Vals, Switzerland, had found its way to SoHo. But instead of a mountain lake in the foreground and the Alps in the background, the loft has a large placid tub and views of the jagged peaks of the New York City skyline. In that way, the architects made sure to honor the need for both the intimate and the transcendent—the human-scale, the tactile, is experienced up close, and the heroic at a distance.

The fact that most elements in the design are handmade emphasizes the distinction between real and ideal. Concrete floors are hand-troweled, and hand-finished bronze clips hold glass partitions in place. "That somebody actually made them creates intimacy," says Dean. "It's a luxury, in a mass-produced world, to have imperfections."

The cast-in-place-concrete dining table at the center of the main room is one of the handcrafted items. It is long and narrow; its surface cries out to be touched; and its configuration is ingenious—allowing it to nest under the kitchen counter, or to roll out on a track when needed for parties (or when Anthony works in the kitchen). Martina takes credit for the idea of the rolling, telescoping table, but it's obvious where she got her inspiration: In its linearity, its tactility, and its ingenuity, it pays homage to the architecture all around it. ■

Sources

Lighting: *Lightolier*

Plumbing: *Duravit (toilets); Get Real Concrete (sinks); Boffi (faucets and showerheads)*

Hardware: *Rixson (pivots); Hafele (sliding hardware)*

Cabinets: *Bando Construction (custom)*

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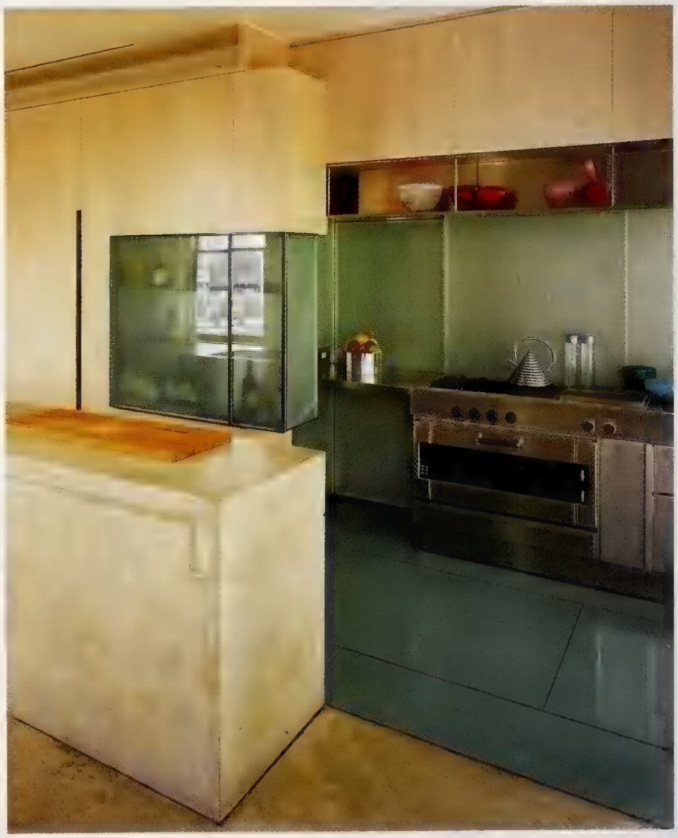
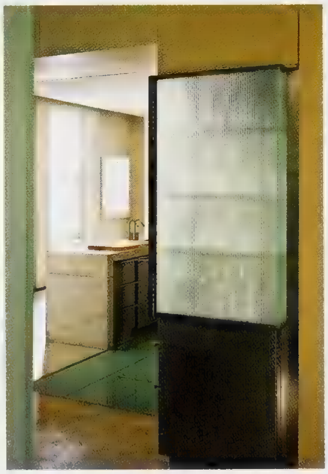
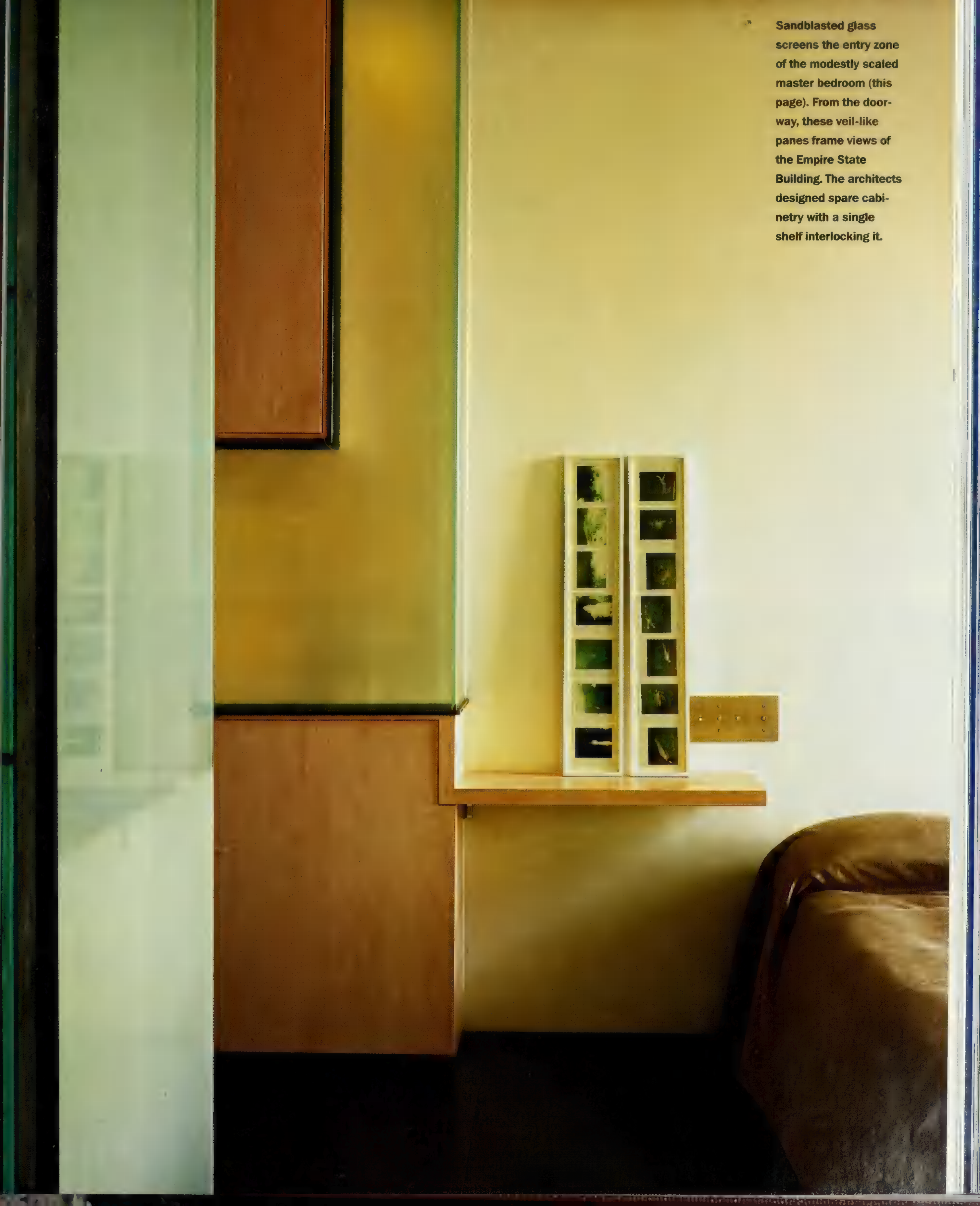


Dean/Wolf used many forms of glass in the loft, including a back-painted variety on the kitchen floor (right and far right), sandblasted screens around the cast-in-place-concrete bathtub (above), and tiles of recycled vitreous material in the bathrooms.





Sandblasted glass screens the entry zone of the modestly scaled master bedroom (this page). From the doorway, these veil-like panes frame views of the Empire State Building. The architects designed spare cabinetry with a single shelf interlocking it.

Cabanalike enclosures rim the lobby lounge, blurring the line between public and private (above). Mirrored partitions and red-painted canvas backdrops frame a lobby platform (below) and the check-in stations (opposite).

At the **W HOTEL** in Times Square, designer **Yabu Pushelberg** creates spare, richly textured compartments, evoking a bento box's sensual delights

By William Weathersby, Jr.

It's a long way from Planet Hollywood to the stylish sphere of the W Hotel in Times Square. The 52-story tower was initially planned as a frenetic, family-oriented satellite of Planet Hollywood's theme restaurant chain. After a change in ownership during construction, however, the pop-culture setting was eclipsed by a more refined realm. With interiors reinvented by the interior design firm Yabu Pushelberg, the W Hotel's serene landscape almost floats above the streetside chaos at the so-called Crossroads of the World.

Replacing a mass-appeal menu, the hotel's interiors now suit subtler tastes. Like a lacquered bento box, the Zenlike hotel offers an array of delights imbued with natural color and texture, all contained in interlocking enclosures. It's a sampler of varied moods, functions, and materials—spare vignettes forming a harmonious whole.

When Planet Hollywood filed for Chapter 11 in 1999, Starwood Hotels & Resorts Worldwide stepped in to retrofit the building as a flagship for its W brand, a domestic chain of 16 urban hotels geared to design-savvy travelers. Starwood scrapped the existing interior specifications and commissioned the Toronto team of George Yabu and Glenn Pushelberg to rework public spaces and guest rooms, providing, as Pushelberg puts it, "an oasis from the sensory overload of the theater district."

The designers tackled the building's constraints head-on. With tight floor plates, boxy public areas were stacked on the lower floors with few connective or transitional spaces. At street level, separate entrances to the lobby, restaurant, and below-grade nightclub further broke continuity. Complicating matters, the restaurant and nightclub were leased to outside operators, introducing yet another client tier to review the design.

"The hotel's public spaces fit together like pieces of a puzzle," Pushelberg says. Patrons might visit only one area, perhaps the restaurant or one of four bars, while a registered guest might require a range of experiences to enrich a weeklong stay. Working with the preset infrastructure, Pushelberg explains, "we explored the idea of compartmentalization, guiding guests through a series of varied, unfolding spaces."

Though the project's populist Hollywood iconography had been abandoned, "we were aware of Times Square's 'everyman' connotation at the heart of the city's busiest tourist district," Pushelberg says. Employing

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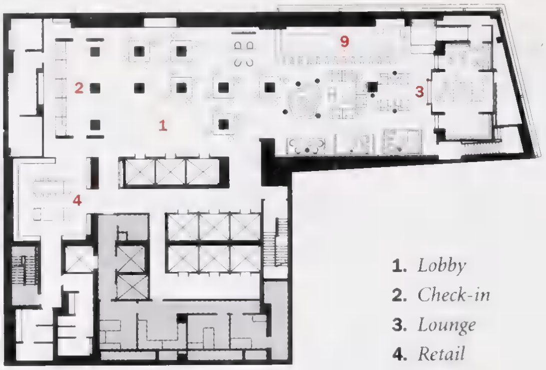
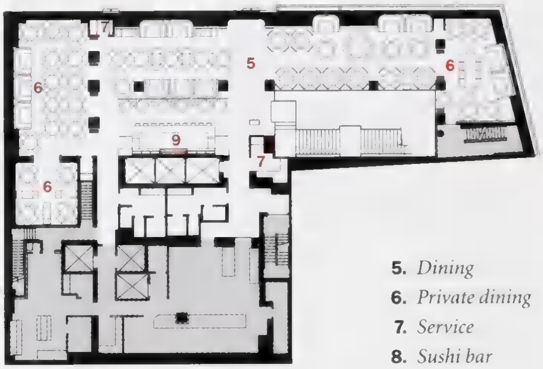
Project: *W New York Times Square, New York City*
Owner/client: *Starwood Hotels & Resorts Worldwide*
Architect of record: *Brennan Beer Gorman Architects—Mario LaGuardia, AIA; Kevin Brown*
Interior designer: *Yabu Pushelberg—George Yabu, Glenn Pushelberg, principals; Mary Mark, Reg Andrade, Anson Lee, Marcia MacDonald, Cherie Stinson, Aldington Coombs, Alex Edward, Eduardo Figuerero, Marc Gaudet, Mika Nishikaze, Sunny Leung, Kevin Storey, project team*
Lighting designer: *L'Observatoire—Hervé Descotte, principal*

Contributing editor William Weathersby, Jr., frequently writes about lighting and interior design for RECORD. *He lives in Westport, Conn.*



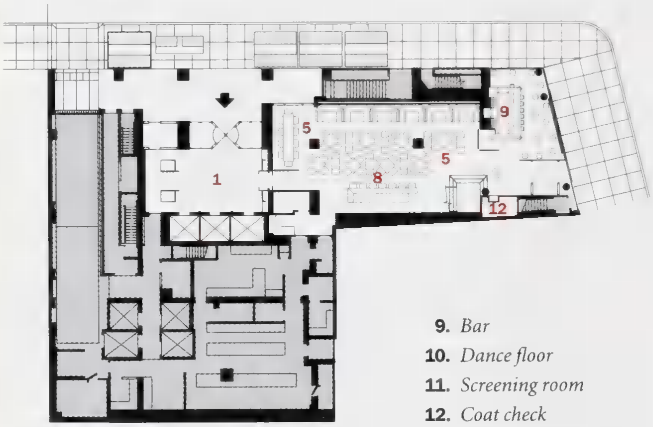
LOBBY: SEVENTH FLOOR

1. *Lobby*
2. *Check-in*
3. *Lounge*
4. *Retail*



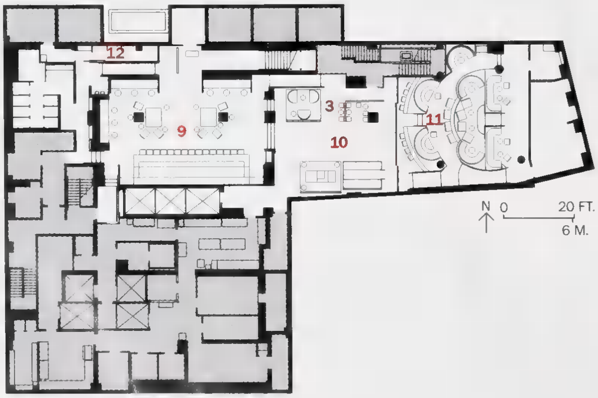
BLUE FIN RESTAURANT: SECOND FLOOR

5. *Dining*
6. *Private dining*
7. *Service*
8. *Sushi bar*



BLUE FIN RESTAURANT: GROUND FLOOR

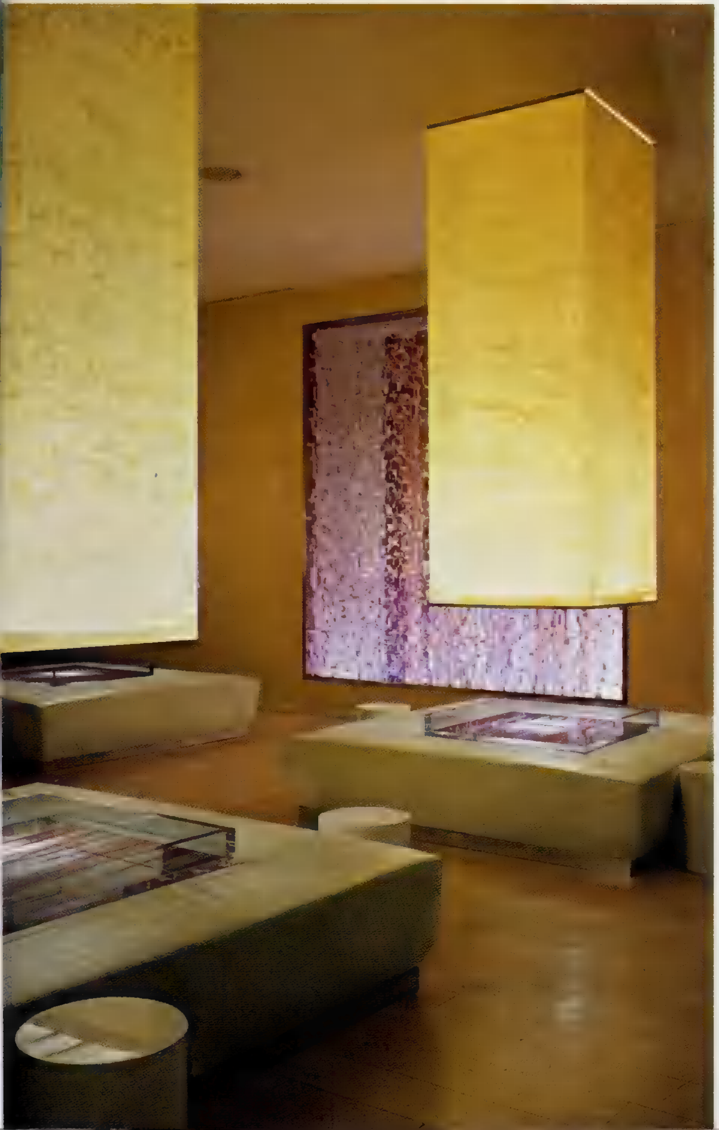
9. *Bar*
10. *Dance floor*
11. *Screening room*
12. *Coat check*



WHISKEY BAR: CELLAR LEVEL

In the Blue Fin restaurant, pine-slat partitions create intimate settings (left and opposite, top). Enhancing the terrazzo staircase, a textured concrete "Wave Wall" and a mobile of abstract fish subtly support the aquatic theme (below left and opposite, bottom). Illuminated jigsaw sections of mirror above the banquettes echo the compartmentalized plan of the two-floor space (below right).

Chain-link curtains undulate through The Whiskey, a below-grade disco-styled nightclub (right and opposite, top). Dubbed the Living Room, the hotel lobby displays a range of upholstered furniture illuminated by oversize lanterns and a back- and front-lit bar (below and opposite, bottom). White-stained wood flooring unifies diverse seating areas in the lobby's loftlike space.



spare, linear furnishings and enclosures without gimmicks, "it's meant to be an accessible, nonconfrontational Modernism that welcomes everyone."

As with Yabu Pushelberg's recent redesigns of interiors at Tiffany and Bergdorf Goodman stores in New York, the W juxtaposes a range of striking visual "moments." Entering the elevator lobby on 47th Street, guests cross a dramatic threshold. Framing the foyer, water flows behind glass panels along the ceiling and side walls, immersing the compact space in refracted light and the sound of trickling water. A black terrazzo floor and steel elevator doors sharpen the cool edges.

Reaching the seventh-floor reception lobby, elevators open directly onto a lounge called the Living Room. Oversize light boxes hover above white leather-upholstered ottomans marching through the loftlike space. The monochromatic palette—white-stained oak floors, terrazzo platforms, acrylic cubes, and plaster and resin walls— is accented by colored lighting cast across an expansive bar and by a rainbow-hued painting in a niche behind an acrylic jigsaw screen. Since the existing windows would have overlooked an adjacent office building, the designers obscured them for a calming, cocoonlike ambience. Seating options—from rough-hewn wood stools on the periphery to deep, plush sofas in an "inner sanctum" near the bar—invite different modes of interaction.

To the west of the living room, the registration area is set within a darker rectilinear "container" defined by black terrazzo flooring, dark paneling, and ribbed-mirror-glass insets. Behind the compartmentalized counter, a slash of red-painted canvas gives the walls a varnished look. Tucked around the corner, a gift shop appears as a brightly lit white cube.

Fronting Broadway and accommodating two cocktail bars plus a sushi bar, the two-floor Blue Fin restaurant belies its 400-seat size. Slats of pine baked to a blackened finish are strung to form sculptural partitions that screen more intimate vignettes. Mirrored walls acid-washed in amber, charcoal, and red tones softly reflect light on bare wood tables circled by Saarinen chairs. Along the terrazzo staircase, a textured concrete wall of undulating waves ascends to a mobile of an abstract school of fish floating overhead. The aquatic theme is sketched in subtle strokes.

In The Whiskey, the 6,000-square-foot basement-level nightclub, chain-link curtains cloak seating areas and a separate screening room, outfitted with mod leather-covered banquettes and stools. A vintage '70s dance floor, whose liquid-filled panels change color as dancers step across them, is an homage to a disco that once occupied the site.

Upstairs, each of the 509 guest rooms is spare yet sensual. Furnishings in smoky charcoal and tobacco shades are set against muted wall covering with color gradations from slate to sand. A continuous neutral plane—a composite of resin and terrazzo—flows from the entry floor into the bathroom, and up along the walls to wrap the shower. Translucent polycarbonate screens, cutting across a corner of the bathroom, serve as room dividers, blurring public/private boundaries.

Like Yabu Pushelberg's playful spaces throughout the W Times Square, these rooms have turned the standard decor of Midtown chain hotels inside out, packing a variety of surprises into a stripped-down, refitted container. ■

Sources

Wall covering, wall finishes: *Metro Wallcoverings; Moss & Lam; Excelsor*

Cabinetry, millwork: *Benchmark Furniture; Pancor Industries; Erik Cabinets*

Paints, stains: *Sherwin Williams*

Flooring: *Stone Tile International; Sullivan Source*

Lighting: *Abramczyk Studio; Baldinger; Color Kinetics; Eurolite; Sistemalux; TPL Marketing; Unit Five Manufacturing*

Furniture: *Knoll; Minima; Pancor*

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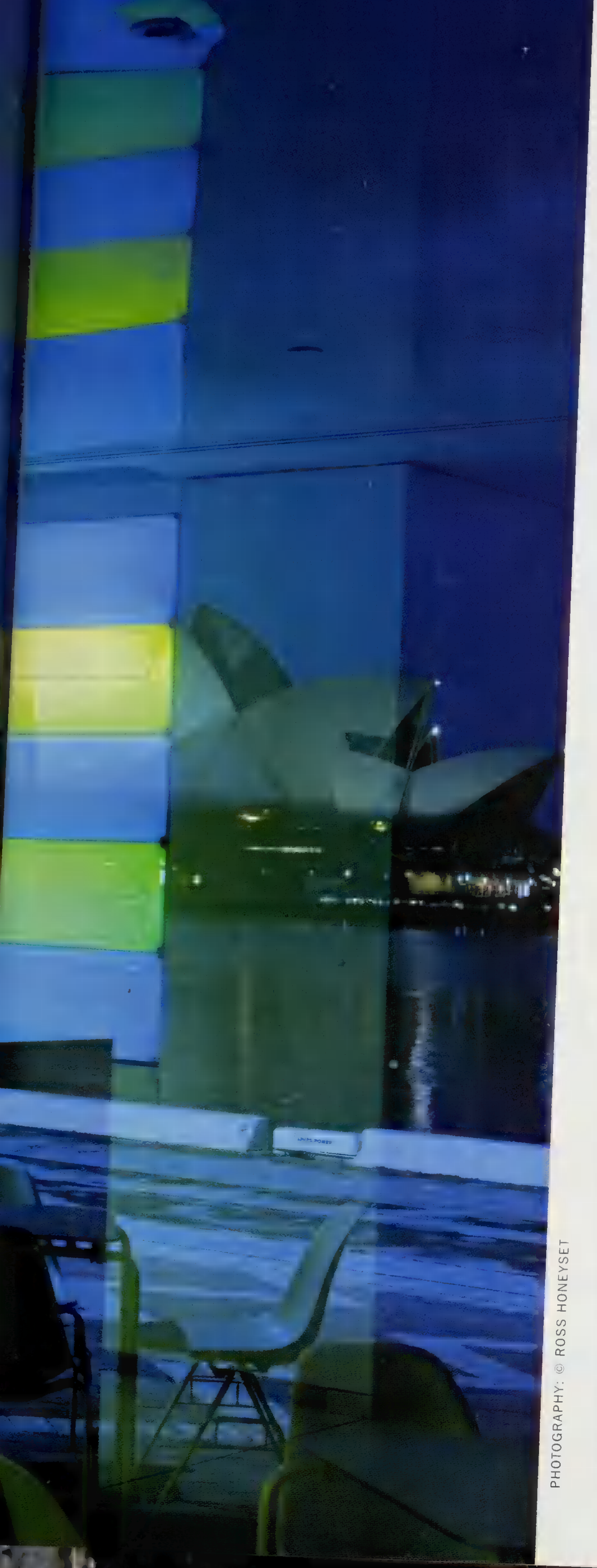
Running the entire length of the bar, the light sculpture constantly changes colors (this page). It is visible from the exterior (opposite) and across the harbor.



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In Sydney, Australia, **Landini Associates** creates **CRUISE**, a wittily named bar and restaurant —a beacon in the harbor

By David Clark

The Sydney Opera House on Bennelong Point marks the entrance to Circular Quay—the maritime gateway to Sydney's busy port, plied daily with ferries, water taxis, and harbor cruise ships. Directly across the cove from the Opera House is the Overseas Passenger Terminal, where ocean liners, too big to fit under the Sydney Harbor Bridge, berth for their stay in the city. Recently refurbished, the terminal's street/harbor level is now lined with bars and restaurants, including Cruise.

In his design for this bar and restaurant, Mark Landini, of Landini Associates, in Sydney, acknowledges the supremacy of the site's postcard Opera House view by keeping the interior simple, streamlined, and white. The most attention-drawing feature is an ever-changing light sculpture, 42 feet long, that runs behind the entire bar—with a mirror at one end of the piece effectively doubling its length.

This gridded light installation was the result of Landini's collaboration with London-based lighting designer and sculptor Jeremy Lord, whose work the designer first encountered three years ago, when he saw a scaled-down version of the concept in a shoe-shop window. Landini was transfixed by the changing colors and, after that, looked for a chance to work with the sculptor. Cruise presented an ideal opportunity, not only because it would be a primarily nighttime bar and restaurant in a major tourist area, but also because its waterfront

David Clark, a former editor of Belle *magazine, is a Sydney-based writer specializing in architecture and design.*

Project: *Cruise Bar and Restaurant, Sydney, Australia*

Architects: *Landini Associates—Mark Landini, creative director; Ian MacDougal, project architect; Clayton Andrews, graphic design; Base Building Architects—Bligh Voller Nield*

Light sculptor: *Jeremy Lord*

Engineer: *Tailor Thomson Whitting*

Consultants: *Complete Metro Lighting; The CKC Group (kitchen)*

General contractor: *St. Hilliers Interiors*

Except for the vividly illuminated wall (below), much of the interior and its furnishings are white, elegantly simple, and streamlined (left). The interior opens toward spectacular views of Sydney Opera House (below left).

location would allow the sculptural light mural to act as a beacon, visible after dark from across the quay.

Behind the sculpture's grid of curved, oblong polycarbonate sheets, shaped to diffuse light most effectively, are four different-colored fluorescent tubes (red, green, blue, and yellow), which a computer program dims or illuminates, mixing the light like paint to create an infinite palette of hues in constant flux.

The light sculpture plays against the larger spectacle of the Opera House across the water. Like a cruise ship lounge, the restaurant and bar have large windows, taking full advantage of the view. With waterside decks and other maritime features from the building's original '50s design, Cruise evokes the experience of being onboard an ocean liner at port.

Landini, who was born in the U.K., moved to Sydney in 1993, having been creative director of the Conran Group. The distinction of his practice, Landini Associates, is that it approaches each project—be it a restaurant, retail shop, or the identity of a large corporation—from a "branding" perspective. The eight-year-old firm, comprising a team of about 20 people—interior and graphic designers, and architects—designs every public interface in its work. At Cruise, not only is the interior by Landini, but so are the menus, the signage, the uniforms, the corporate identity, and everything down to the name with its playful double entendre. The proprietor, who also owns a pub in a nearby suburb, engaged Landini here on the Sydney Harbor to envision and realize an entire realm. Even the drink coasters, graphically mimicking the light sculpture, are part of the greater concept of Cruise. ■

Sources

Terazzo: *TAM (walls, floor, and bar)*
Lighting: *The Colour Light Company (kinetic wall light)*
Cabinetwork: *Norford Industries*
Furniture: *Unifor (Vitra Eames plastic chairs); DeDeCe (Capellini stools); Map (stacking tables designed by Landini Associates)*

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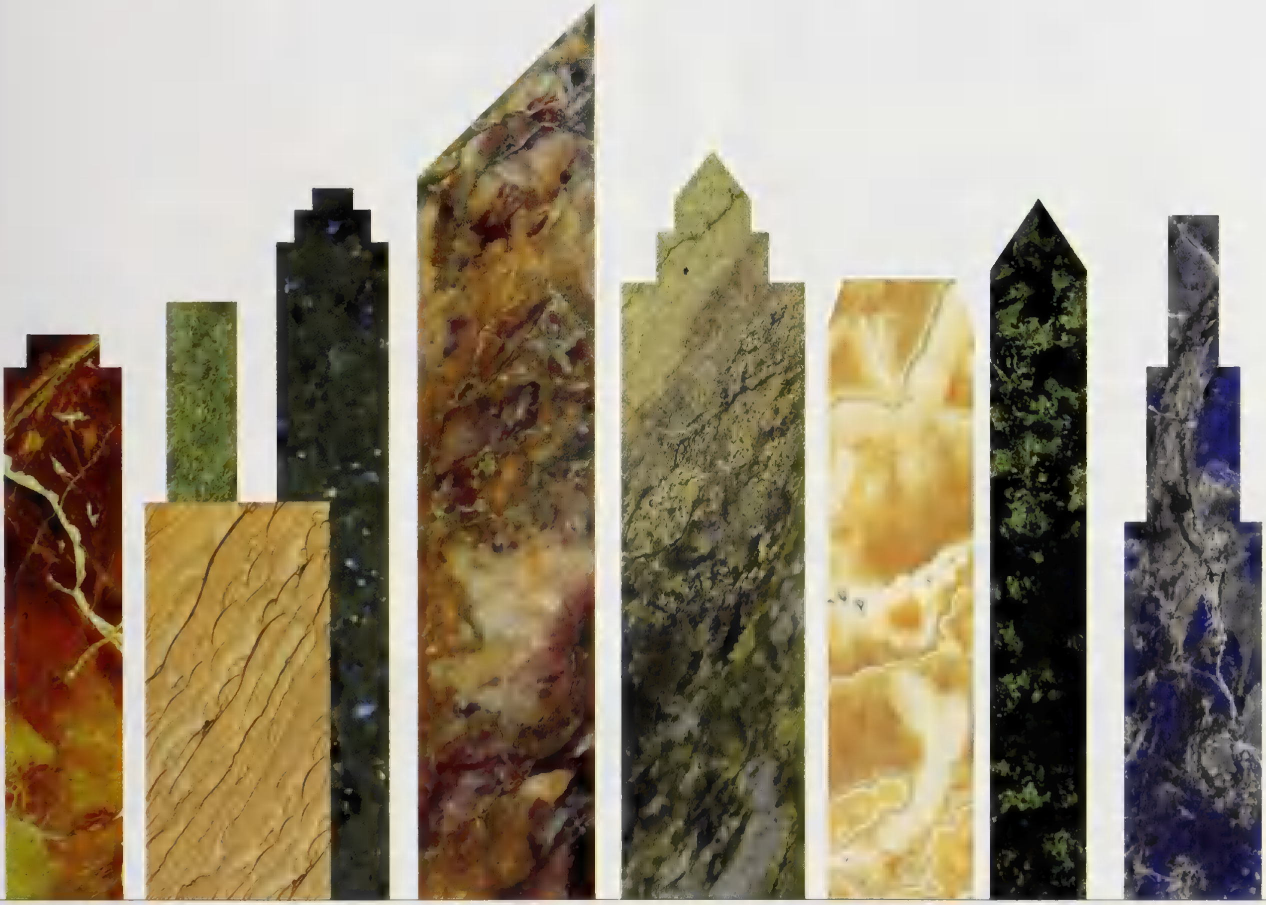

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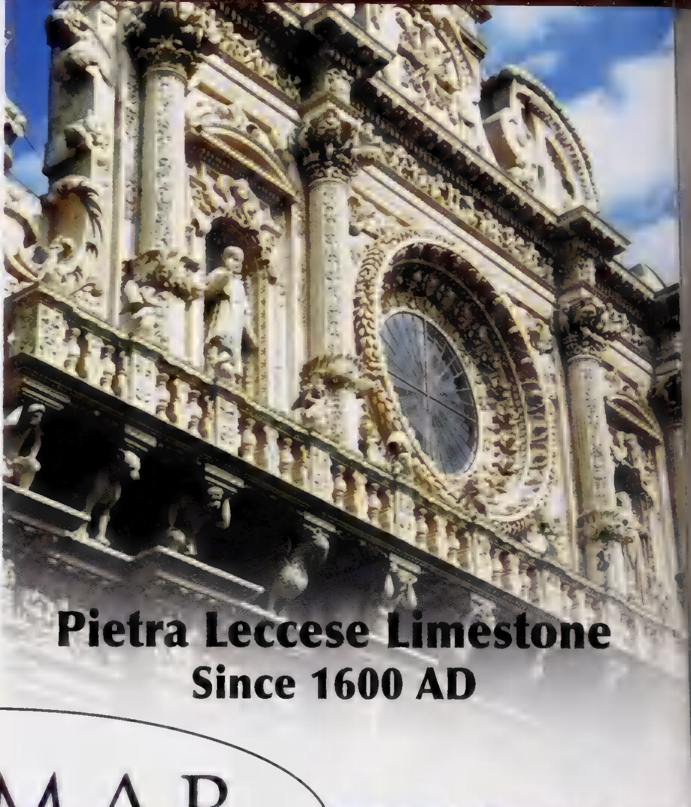

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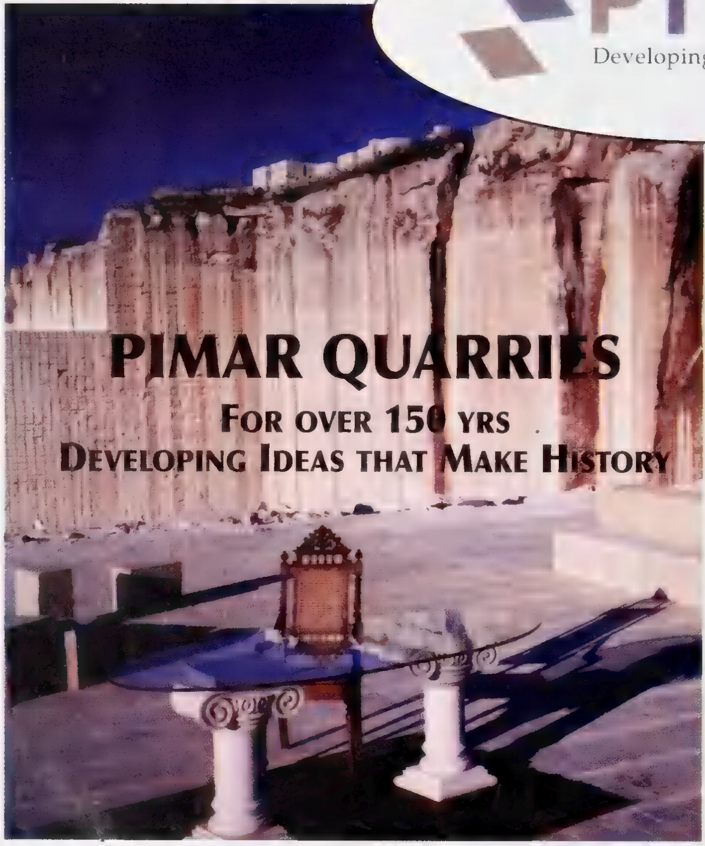

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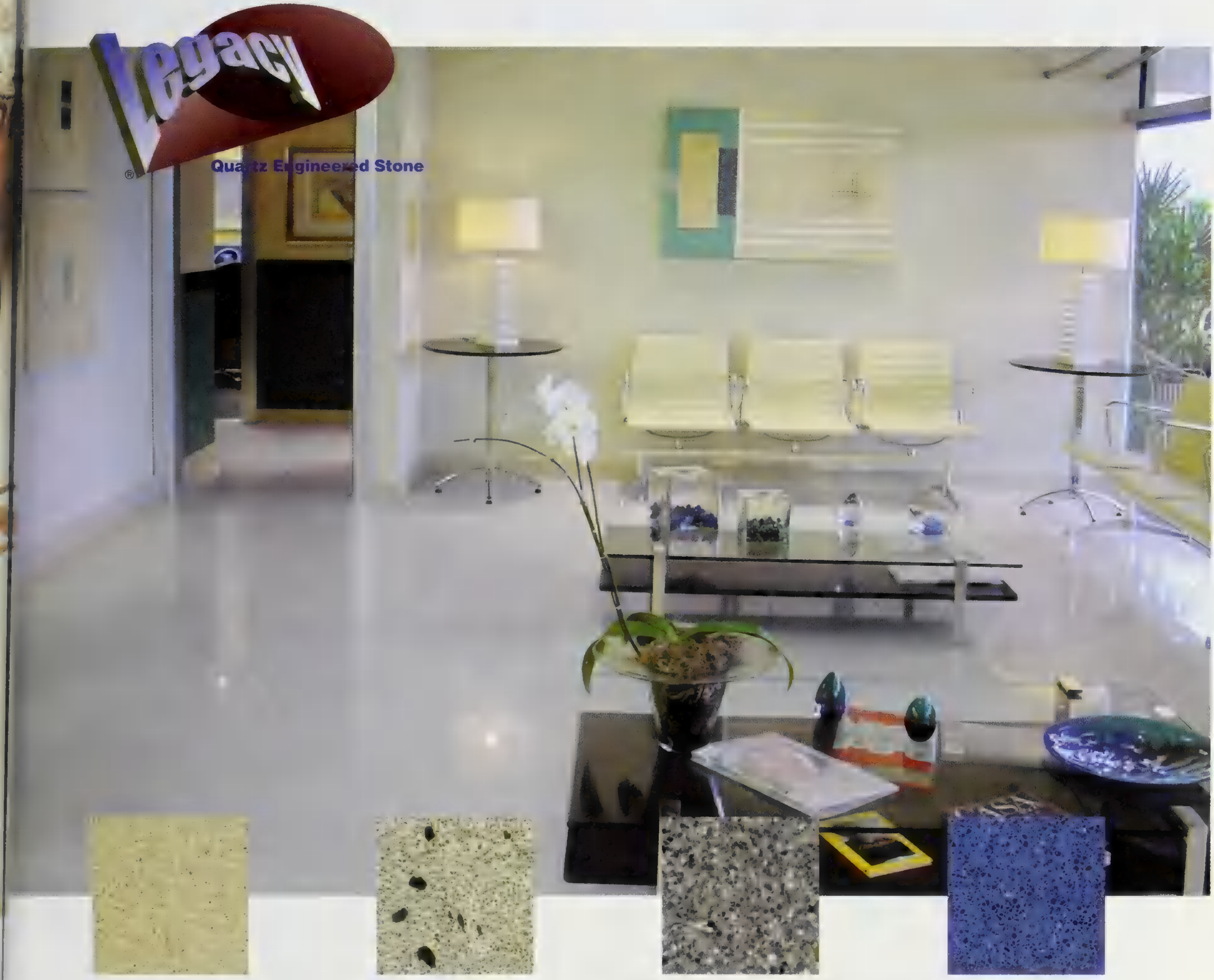

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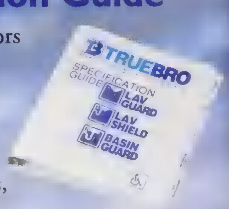

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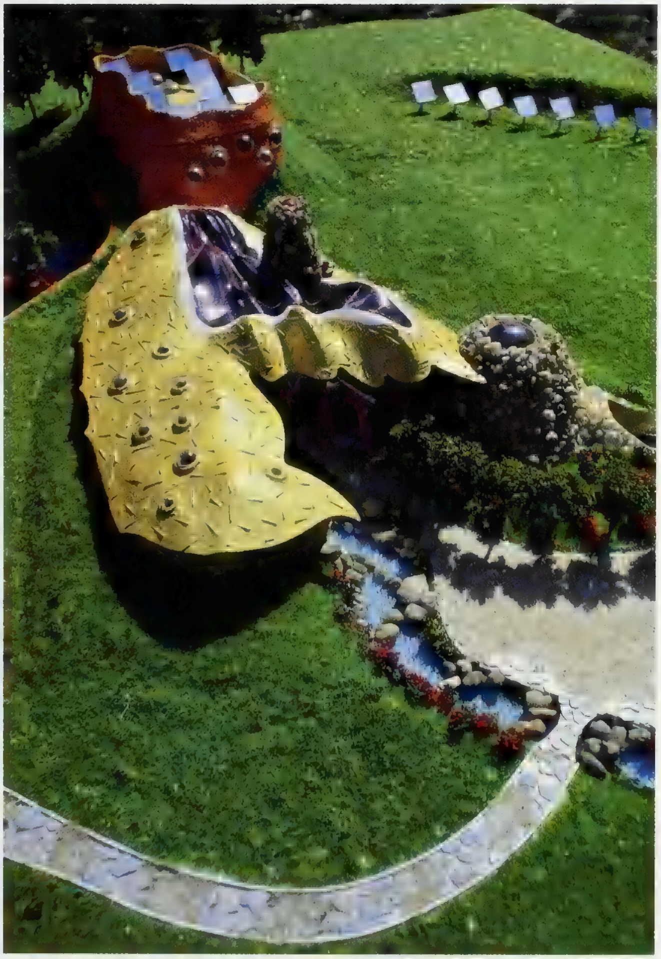
New Building Systems Mimic Nature and Return to a Biocentric Approach to Design

GROWTH IS GOOD WHEN IN ACCORDANCE WITH NATURE'S OWN TIME-TESTED BLUEPRINT

By Nancy B. Solomon, AIA



To be built in Wisconsin's "tornado alley," the underground Kaufmann House by Eugene Tsui will have parabolic openings to maximize light penetration.

We've come a long way from the sealed-window, fluorescent-lit, energy-guzzling buildings of the mid-20th century. With the help of the U.S. Green Building Council's LEED rating system and other green guidelines, more and more architects are meeting stringent environmental criteria. "Architects are getting good at the 'technofix,'" says Bill Browning, Hon. AIA, a principal at Rocky Mountain Institute. They are becoming adept at applying technologies that deplete fewer precious resources, generate less toxicity, and threaten fewer habitats. In an industry that claims about 40 percent of the energy, 40 percent of the virgin minerals, and 25 percent of the virgin wood consumed worldwide per year, what else could we ask for?

Much more, it turns out. Up until now, sustainable design has been essentially an effort to minimize damage so that we can at least maintain what we still have. A worthy objective, considering the ever-mounting environmental degradation we are witnessing, but is this all we can aspire to? "It would be a pretty sorry state of affairs," says architect Bill McDonough, FAIA, principal of William McDonough + Partners in Charlottesville, Virginia, "if, when asked how are things between you and your spouse, you answer 'sustainable.'" Like a good marriage, good design should be uplifting and fertile.

Nature—whose designs are inherently efficient, effective, and beautiful—offers us models of abundant, healthy production. In their new book, *Cradle to Cradle: Remaking the Way We Make Things* (North Point Press, 2002), McDonough and his coauthor, chemist Michael Braungart, illustrate this with a cherry tree: Its fruit becomes food for animals and insects; its bounty of lovely leaves degrades naturally into the earth. Nothing is wasted; nothing is toxic. In terms of nature, growth is in fact good. So why can't the same be said about the growth of human settlement?

It can, say those on the green frontier, if we can learn from nature. According to Gil Friend, president and C.E.O. of Natural Logic, "Nature's ecosystems have spent 3.85 billion years building efficient, complex, adaptive, resilient systems. Why should we reinvent the wheel, when the R&D has already been done?" Increasingly, architects are collaborating with chemists, biologists, ecologists, and psychologists to learn Mother Nature's secrets and apply them to our own mortal designs.

Finding our place

"Why does a 400-year-old structure still work and feel right?" muses Boston-based architect Bill Reed, AIA, vice president of Natural Logic. "Not because of its style—timeless buildings exist in any style—but because it grew out of its place." The master builder, who was local, had all

Contributing editor Nancy B. Solomon, AIA, writes about computers, building technology, and practice topics of interest to the architectural community.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ *AIA Continuing Education article. To receive credit, turn to page 180 and follow the instructions.*

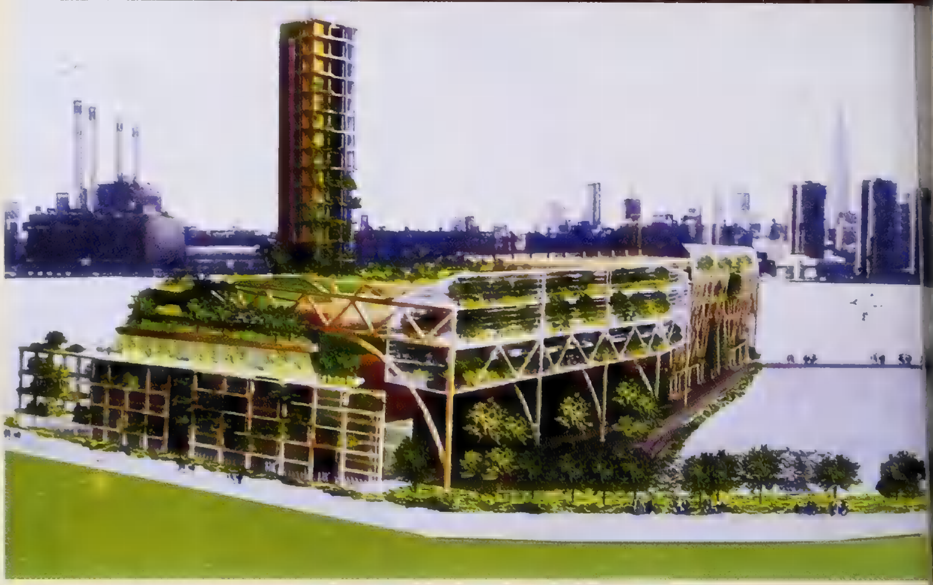
LEARNING OBJECTIVES

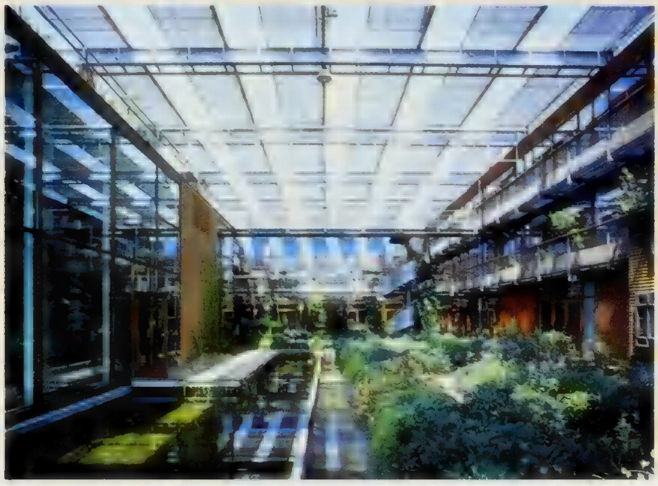
After reading this article, you should be able to:

1. *Define regenerative design*
2. *Explain why sustainable design is not enough*
3. *Discuss biophilic architecture*
4. *Discuss biomimicry's effect on building design*

WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to ***architecturalrecord.com***.

Proposed Power Plant
Brooklyn, N.Y.
Artist Michael Singer of Wilmington, Vermont, and a team of designers, including Marcus Springer of Cannon Design in Boston, conceived of a community-friendly power plant for an industrial site along the East River in New York City (right). Waste heat from the utility plant will help to grow garden plants in greenhouses built along the exterior structure of the building (below). The public will be able to walk through a riverfront garden next to the power plant's facade.





IMAGES: © PHOTOMONTAGE BY STEPHAN SOLZHENITSYN (TOP)

the local data he needed—including climate, available materials, and labor, culture, and economy—to influence his architectural solution. "Local conditions allow a building to be part of its place," sums up Reed.

Consider another scenario: "Until 1860, Paris fed its entire population with food that came from no farther than 40 miles away," says Reed. It was a closed-loop system: Vegetables were eaten, and the resulting human waste became fertilizer. Once the city sewage system was constructed, however, the nutrients flowed out and the loop was broken.

In our rational Cartesian framework—in which everything can be logically mapped out in quadrants or dissected into discrete units—we have, for the most part, lost sight of such underlying flows, cycles, and connections. Even worse, we have become indifferent to them, believing our technological wizardry can outdo Mother Nature's organic schemes. But our technological hubris has come home to roost.

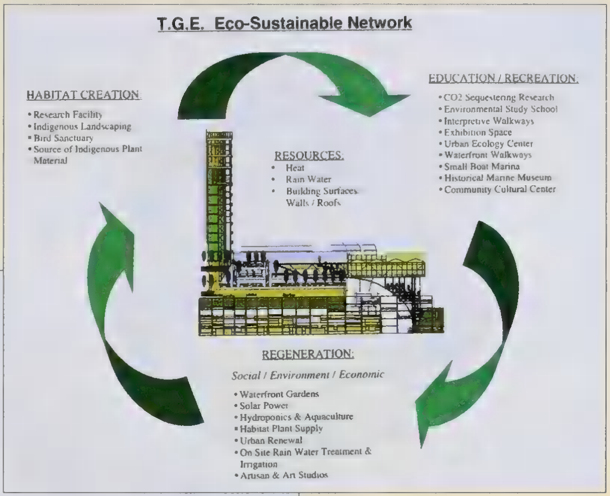
"We are a society that seeks to create manageable uniformity," said landscape architect John Tillman Lyle, author of *Regenerative Design for Sustainable Development* (John Wiley & Sons, 1996) and a professor at California State Polytechnic University at Pomona until his death in 1998. In creating such regularity, however, we destabilize life-giving processes. America's ubiquitous turf grass, for example, yearns to evolve into a meadow and then a forest. Yet we beat it into submission by mowing and dumping chemicals on it. In the process, we inhibit groundwater recharge; poison air, land, and water; and waste not only precious fossil fuels but also our own precious time.

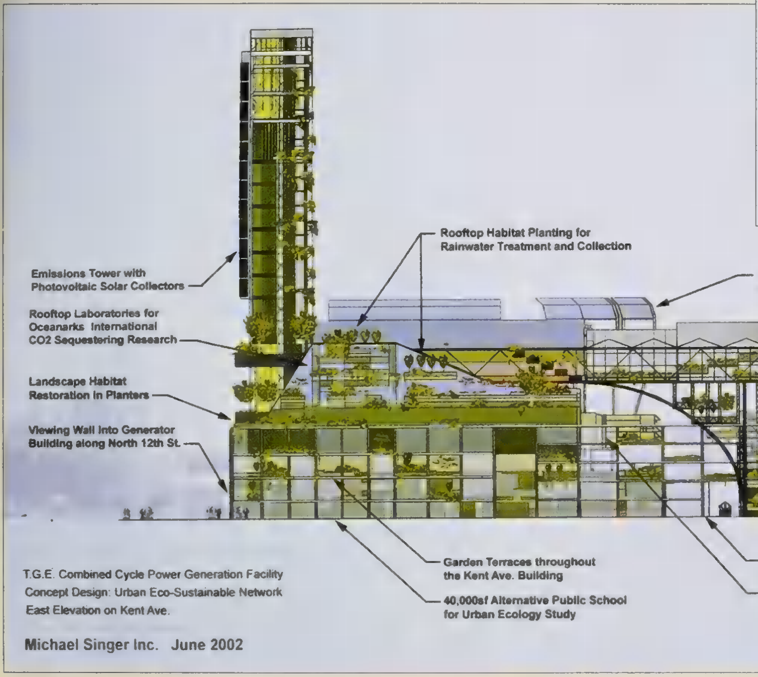
To heal the Earth, and ourselves, says Reed, "we have to fundamentally change our relationship with natural systems, from energy and water flows to nutrient cycles." Instead of fighting against Mother Nature, we need to work with her to help stabilize nature's life-giving processes. It is just not up to the Earth to heal herself, because we, too, are part of the Earth.

WE INHIBIT GROUNDWATER RECHARGE AND WASTE NOT ONLY PRECIOUS FOSSIL FUELS BUT OUR OWN PRECIOUS TIME.

This kind of design goes beyond sustainable; it is regenerative. It revitalizes the underlying systems—both cultural and natural—so that all can work efficiently and in concert to achieve and maintain a healthy environment. Regenerative design grows out of various ecological movements, including permaculture. The word, originally intended as a hybrid of permanent and agriculture, was coined in 1978 by Australian ecologist Bill Mollison and one of his students. Reed boils the discipline down to its essence: "Permaculture basically says that gravity happens. Water flows down and takes nutrients with it." By acknowledging such forces and working with them, permaculture designers strive for systems that reap the

The design team considered the various systems, both broadly (right) and in technical detail (below). The vertical-emissions tower will be clad with photovoltaic solar collectors to generate additional energy. Flowers and farm vegetables grown in the greenhouse will be sold to restaurants and other commercial venues, while indigenous and endangered plants will be cultivated in the natural habitats located on-site and elsewhere in the city.




Emissions Tower with Photovoltaic Solar Collectors
Rooftop Laboratories for Oceanarks International CO2 Sequestering Research
Landscape Habitat Restoration in Planters
Viewing Wall Into Generator Building along North 12th St.
Rooftop Habitat Planting for Rainwater Treatment and Collection
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Rainwater Storage Cisterns for Site and Greenhouse Irrigation
T.G.E. Combined Cycle Power Generation Facility
Concept Design: Urban Eco-Sustainable Network
East Elevation on Kent Ave.
Michael Singer Inc. June 2002

greatest benefits with the least amount of effort and resources.

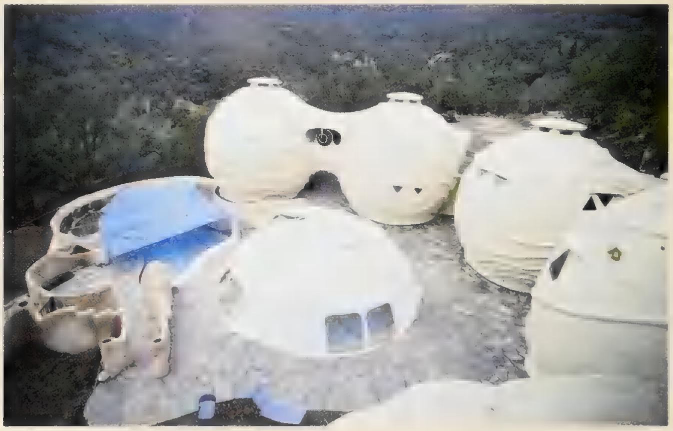
The magic of tapping into natural systems is illustrated in a simple but powerful land-restoration project undertaken by architecture-trained permaculture designer Vint Lawrence. In 1991, Lawrence bought a 400-acre ranch called Apache Creek in the Sangre de Cristo mountains of Santa Fe, New Mexico. These mountains have suffered from erosion over the years, causing a dramatic decrease in vegetation.

To reestablish the natural flora in the region, Lawrence needed to minimize soil erosion and maximize water absorption. To do so, he had to slow the flow of water over the terrain. So, he installed gabions and check dams— man-made barriers—and ponds at strategic points on his site. The work paid off: Today, even after two years of drought, the raised water table at Apache Creek Ranch supports a lush, green riparian zone.

During the course of his research, Lawrence learned that beavers lived in the Sangre de Cristo mountains until about 1820, at which point they had all been trapped for their furs. He subsequently uncovered numerous black loam deposits—physical evidence that a series of beaver ponds had indeed traversed the land at one time. "They were the water engineers," says Lawrence. Once the beavers were decimated, their dams eventually collapsed and erosion increased. In this region, there is not yet enough vegetation to support authentic dam-building critters, so Lawrence has intervened as a self-described "analog beaver."

Regenerative design is not limited to rural settings. A multidisciplinary team led by artist Michael Singer of Wilmington, Vermont, took this integrative approach when developing the conceptual design for a natural-gas power plant in the Brooklyn, New York, neighborhood of Greenpoint. An oil storage depot currently occupies the eight-acre industrial riverfront site. The team, which included architect Marcus Springer, of Cannon Design in Boston, and engineer Calen Colby, of Oest Associates, in South Portland, Maine, began by investigating the existing local systems, from environmental to educational, and by considering how these could be enhanced by the power plant's available resources—namely waste heat, storm water, and expansive roof and wall surfaces.

Roof and walls became a logical framework for planting. A greenhouse system integrated into the building's vertical surfaces takes advantage of the waste heat emitted from the power plant. With this recaptured heat, the plants can grow more quickly and all year around. Planting on the roof reestablished a natural habitat in this neighborhood. It also slows down and treats storm-water runoff. Phosphorous removed from this water becomes nutrient for the plants instead of pollution in the adjacent river. The collected storm water is stored in a cistern on-site for future irrigation, eliminating any need to siphon water from New York City's already overtaxed system. Meanwhile, the large vertical-emissions stack doubles as a support for 65,000 square feet of photovoltaic panels, which



The New Watsu Center School and Residence Middletown, Calif.

The world headquarters for the teaching and practice of Watsu, a therapeutic massage done in water, is located in an earthquake-prone area. Architect Eugene Tsui employed five geodesic domes (above) as the structural system. A series of parabolic arches angling in various directions (far right) creates a forestlike space for three outdoor showers.

PHOTOGRAPHY: © EUGENE TSUI

will produce enough electricity to operate the school and the greenhouse lights and irrigation pumps, in addition to adding power to the utility grid.

Biophilia

While these intrepid designers are working to integrate architecture with natural systems, scientists are increasingly mounting evidence of the critical role nature has played in our evolutionary development and, if properly embraced, the potential nature offers for our future health and productivity. This area of study has come to be known as biophilia.

SCIENTISTS ARE MOUNTING EVIDENCE OF THE CRITICAL ROLE NATURE HAS PLAYED IN OUR EVOLUTIONARY DEVELOPMENT.

Edward O. Wilson, professor of comparative zoology at Harvard University, first used the term in 1984 to describe humans' innate attraction to other forms of life. According to Wilson, our affinity for nature is intrinsically linked to our own human nature because—logically enough—our species developed over the course of hundreds of thousands of years within nature. "In short, the brain evolved in a biocentric world, not a machine-regulated world," writes Wilson in *The Biophilia Hypothesis* (Island Press, 1993). From this premise, it follows that we humans may not be able to achieve our full potential—physically, intellectually, or spiritually—if we become too isolated from the natural world.

Various research projects seem to support the biophilia premise. In one study by environmental psychologist Roger S. Ulrich, professor at Texas A&M University in College Station, patients recovering from surgery were assigned to rooms with windows overlooking either deciduous trees or brick walls. Those with the natural views recuperated more quickly while receiving less powerful painkillers. And, according to Seattle-based environmental psychologist Judith H. Heerwagen, productivity increased slightly when Herman Miller workers first moved into the McDonough-designed SQA building in Holland, Michigan, which boasts many green features. This is atypical, explains Heerwagen: Productivity typically decreases significantly during the first few months after a company relocates.

Stephen R. Kellert, professor at the School of Forestry and Environmental Studies at Yale University, has explored the implications of biophilia on the built environment. In *Reshaping the Built Environment* (Island Press, 1999), Kellert spells out nine values of biophilia—defined briefly below—which he proposes as "broad design objectives" for future development:

- aesthetic (physical attraction and appeal of nature)
- dominionistic (mastery and control of nature)
- humanistic (emotional bonding with nature)

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Herman Miller Front Door
Holland, Mich.

In the spring of 2000, Herman Miller's corporate leaders and their support team moved into the Front Door (left). The interior offers generous amounts of daylight in keeping with the principles of biophilia. This new office addition and the original Design Yard (top left), built in 1988, were designed by the Minneapolis-based architecture firm Meyer, Scherer & Rockcastle. The lobby (above) features a playful wall fountain opposite entry doors.

PHOTOGRAPHY: © ROGER HILL

- naturalistic (exploration and discovery of nature)
- moralistic (moral and spiritual relation to nature)
- negativistic (fear of and aversion to nature)
- scientific (knowledge and understanding of nature)
- symbolic (nature as a source of language and imagination)
- utilitarian (nature as a source of material and physical reward).

Specific building elements that figure prominently in a discussion of biophilic architecture include organic forms; views to nature; indoor greenery; natural lighting, ventilation, and materials; and spatial and visual diversity.

According to Heerwagen, good examples of biophilia in the built environment are still few and far between. In fact, she believes modern zoo design takes these issues much more seriously than design for human habitation: "Zoo designers now consider the animals' natural environments and what they need—physically, psychologically, and socially—to be healthy." Long gone are the small, boxy cages of yesteryear; animals are allowed to roam more freely and, in some instances, even search for food. In contrast, how many Americans still work in sterile, windowless cubicles?

In an attempt to remedy our current human predicament, Rocky Mountain Institute is collaborating with Heerwagen and Kellert to develop a multiyear research program that would seek to determine the kinds of relationships that are truly needed between our built and natural environments.

Biomimicry

Biomimicry represents yet another take on nature's role. The word, made popular by life science writer Janine Benyus of Helena, Montana, in her 1997 book of that name, describes the process of imitating nature to solve human quandaries. Benyus and biologist Dayna Baumeister run an organization called Biomimicry, which offers workshops on the subject.

The study of natural systems, say biomimicry proponents, will trigger innovations in building design and building-product development that are resource efficient, environmentally benign, and aesthetically satisfying. The now classic building example is Eastgate [ARCHITECTURAL RECORD, July 2001, pages 142–44), a mixed-use, mid-rise complex in Harare, Zimbabwe, designed by Zimbabwean architect Mick Pearce of Pearce Partnership. Built in the mid-1990s, the building *parti* was inspired by the well-ventilated African termite mounds, which maintain a constant internal temperature of 87 degrees Fahrenheit despite extreme temperature fluctuations outside.

There are product examples, as well. Two were introduced by German companies in 1999: Lotusan, exterior silicone paint by Ispo, and Lotus Effect roof tiles by Erlus. They both exhibit self-cleaning properties based on the so-called "lotus effect." This phenomenon, discovered by

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biologist Wilhelm Barthlott of Bonn University, in Germany, refers to the process by which the lotus leaf maintains its purity despite its muddy environs. Simply put, the surface microstructure of the lotus leaf is so bumpy that there is not enough contact area for dirt particles or water droplets to adhere. Instead, the water beads up and rolls off the leaf, taking the miniscule particles along with it. The manufacturers duplicated this bumpy surface on their products to avoid the common problem of surface streaking. The lotus effect is counterintuitive to our traditional notions of cleaning—typically, manufacturers have tried to keep surfaces as smooth as possible to avoid crevices that trap dirt.

Cradle to Cradle

The title of McDonough and Braungart's new book can be seen as an important corollary to biomimicry. Following nature's thrifty model—where nothing is ever wasted—they propose developing products that can be fully recycled as either biological or technical nutrients. The former biodegrade fully, safely, and naturally into the environment. The latter return to industry as raw materials for future products.

Most products today are what McDonough and Braungart call "monstrous hybrids," in that they combine biological and technical elements in such a way that these materials cannot be recycled into either loop. These now useless resources pile up at the landfill. In addition, most products that claim to be "recyclable" are actually "downcyclable" to a lower-quality product. Eventually, the quality becomes so poor that this material cannot be reused for anything.

The architect and the chemist teamed up in 1995 to form McDonough Braungart Design Chemistry. They have worked with various companies worldwide to create products according to their closed-loop model. For example, in 1995 McDonough and Braungart collaborated with Swiss mill Rohner Textil and textile distributor DesignTex to create Climatex Lifecycle, a compostable fabric for furniture. Climatex Lifeguard, a biological nutrient fabric that meets the most stringent flame-retardant tests worldwide, was introduced in 2001.

Making the connections

The sustainable movement has always stressed the importance of holistic, integrated design. "We are ecologically interdependent with the whole natural environment," wrote Susan Maxman, FAIA, president of the American Institute of Architects, and Olufemi Majekodunmi, president of the International Union of Architects, in the "Declaration of Interdependence for a Sustainable Future"—the culminating statement from the 1993 UIA/AIA World Congress of Architects in Chicago.

Certainly the environmental challenges we face are still great. Yet, thanks to a handful of professionals who have steadfastly thought beyond the proverbial architectural box, we not only have a better grasp of the problems, but also a glimmer of potential solutions. If architecture is indeed part of the great web of life, it may be high time that all architects snare a biologist to help unravel nature's complex building codes. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "New Building Systems Mimic Nature and Return to a Biocentric Approach to Design" using the learning objectives provided.
- Complete the questions below, then fill in your answers (page 244).
- Fill out and submit the AIA/CES education reporting form (page 244) or download the form at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. To be good at the "technofix," architects are applying technologies that do all except which?
a. deplete fewer precious resources
b. deplete more precious resources
c. generate less toxicity
d. threaten fewer habitats

2. Nature's ecosystems have spent how long building efficient, complex, adaptive, resilient systems?
a. 1 billion years
b. 2.5 billion years
c. 3.8 billion years
d. 4.3 billion years

3. The local data a master builder needed for a building to be part of its place included all except which?
a. sewage treatment systems
b. climate conditions
c. available materials and labor
d. economic conditions

4. Design that goes beyond sustainable is called which?
a. ecological
b. regenerative
c. biological
d. natural

5. Permaculture designers strive for systems that reap the greatest benefits with the least amount of which?
a. expense and time
b. time and materials
c. time and effort
d. effort and resources

6. Biophilia is a study of which?
a. human obsession with living things
b. human fear of plants
c. human attraction to living things
d. human avoidance of plants

7. Specific building elements that figure prominently in biophilic architecture include which?
a. organic forms
b. views of nature and indoor greenery
c. spatial and visual diversity
d. artificial lighting and ventilation

8. The process of imitating nature to solve human quandaries is known as which?
a. biophilia
b. biomimicry
c. permaculture
d. regenerative design

9. The study of natural systems will trigger all of these benefits in building and product design except which?
a. resource efficiency
b. spatial diversity
c. benign environment
d. aesthetic satisfaction

10. Most products that claim to be recyclable are actually which?
a. cycled to a lower-quality product
b. cycled to a higher-quality product
c. cycled to an extended-life product
d. cycled to a reusable product

inspiration?

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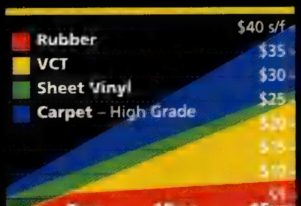

Source: *How to Make Business Decisions for Facility [illegible]*, Suzanne [illegible] [illegible], AIA, [illegible]

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Boston's Park Plaza Hotel, built in 1927 by E.M. Statler, the great 20th-century hotelier, had the requisite ballrooms and a library, but it was also the first hotel in the U.S. to have a radio and cold running water in every room. Seventy years later, the Saunstar Operating Company purchased the building and began a series of projects to restore and upgrade this venerable, 950-room landmark, Boston's only representative in the Historic Hotels of America. The grand spaces were restored to their former glamour, but countless small projects, such as 1,200 paint-layered, cast-iron radiators in the bathrooms, created a sizable restoration challenge, as well.

The task of removing the old paint and preparing the surface for repainting fell to the Fortune Metal/Klein-Farris Company, a family-owned, metal-finishing business based in Needham Heights, Massachusetts. For the radiators, the finishers used a closed-loop system in which each radiator is placed in a cabinet and then blasted with aluminum oxide, an abrasive. In this case, blasting removes the paint layers and leaves the surface ready for repainting. "In the old days, the media [the abrasive material] was sand, hence the generically used term 'sandblasting,' " explained Fortune Metal's president, Stephen Liff. "But health and safety concerns about silicosis [a disease caused by inhaling the silica sand residue] has regulated its use nearly out of existence."

Not only health concerns, but new demands for paint removal from less durable materials than cast iron and steel has led to a tremendous range of products that are used in blasting processes. Similarly, environmental concerns have eroded the use of chemical removers, as well. "In some applications, chemicals can be the very best method," continued Liff, "but, compared to blasting, it can be laborious. With cast-iron radiators, as with structural steel, you can blast them with just about anything and they clean up and look almost brand-new, but more delicate surfaces may call for lighter abrasives, such as dry ice pellets or baking soda, which have the added advantage of being harmless to the environment. In any case, you want to use the least amount of abrasive under the least amount of pressure to do the least amount of damage to the substrate."

Environmental impact, surface durability, future finishing, as well as volume and cost all have a hand in determining the methods and materials of abrasive cleaning. For example, the aluminum oxide that is being used to clean the Park Plaza radiators is relatively expensive, but it is used in relatively small quantities in a closed environment where it is recovered and reused. Other reusable media include glass beads, steel shot and grit, and crushed garnet. Each has other properties that determine suitability for a particular job. Inexpensive media such as coal slag, which is sold under trade names such as Black Blast, Black Beauty, and Black Diamond, is used for large outside work and is not reusable for blasting. Although it produces a moderate amount of dust and leaves behind a black residue, it is a very popular media that has been around a long time, and it is possible to recover and recycle the grit to other industries.

The amount of dust porduced, which depends on how much the material breaks down after impact, affects reusability. The media is manipulated to get the right effect by selecting a "mesh size," the measure of the individual grains, and the "nozzle pressure," the size of the opening and the force with which the compressed air directs the material at the object to be cleaned. The finish specifier determines the coating they want to use on the structural steel. That coating—paint or another material—requires a certain degree of roughness, called the "profile" or the "anchor pattern," in order to adhere to the surface.

Before-and-after shots show the effectiveness of blasting the radiators clean with aluminum oxide.

PHOTOGRAPHY: COURTESY

"The specified profile is what we use to select the grade of abrasive for that application," explained Chris Karr, marketing manager for Green Lightning, another type of media produced from Olivine, a naturally occurring mineral. Olivine produces a hard, dense, and angular media that can clean the same area using less abrasive and softer materials. It creates very little dust and has a neutral color, both beneficial characteristics when used, as it often is, for single-use, exterior cleaning.

Other abrasive materials used in blasting include crushed glass, glass pellets, plastic bead, and even walnut shells. Metal cleaning is a common application and includes far more than structural steel. Fortune Metal/Klein-Farris cleaned 3,000 escalator steps for the U.S. Postal Service and listed doors, hardware, light fixtures, furniture, and decorative iron as some other good candidates. Furthermore, masonry, wood, and even fiberglass can be cleaned with some of these products at the right pressure and grade of abrasive. *Barbara Knecht*

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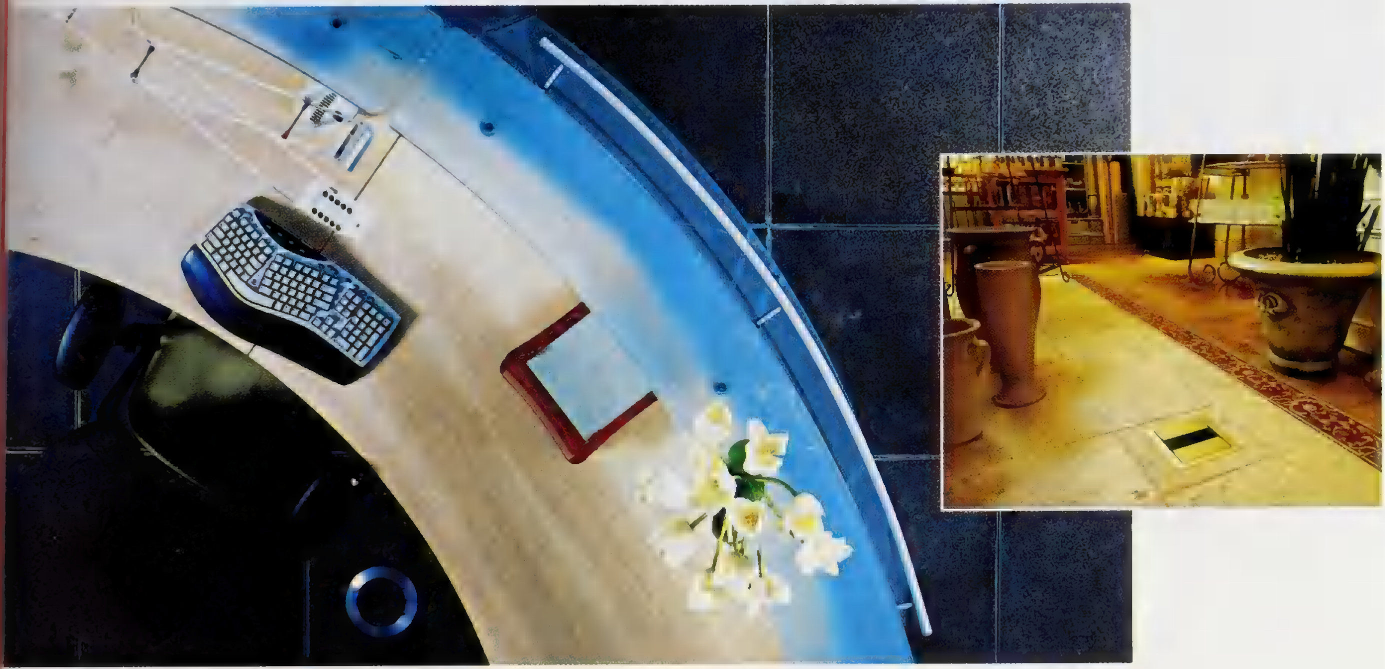

Wiremold Presents:

Wire and Cable Management with Poke-Thru Devices and Floor Boxes

Poke-thru devices and floor boxes set in concrete are among the most useful and flexible wire and cable management systems for large, open-plan spaces. Both can be used to provide direct feeds of power and communications, or they can be used in conjunction with modular office furniture.

The design community should be aware of new standards that will affect the use of poke-thru devices and floor boxes. Beginning in June, 2003, new standards under UL514A will require that the power compartments of floor boxes and poke-thru devices meet a test for scrub water exclusion on carpet surfaces. These standards are designed to ensure that water does not enter power outlets during routine maintenance, such as wet mopping and carpet shampooing.

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Use the learning objectives below to focus your study as you read **Wire and Cable Management with Poke-Thru Devices and Floor Boxes**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 189, then follow the reporting instructions on page 250 or use the Continuing Education self report form located at *architecturalrecord.com*.

Learning Objectives

At the end of this article you will be able to:

- interpret how poke-thru devices and floor boxes—and their use on various surfaces—will be impacted by the new standards for scrub water exclusion testing
- plan wire/cable management systems that contribute to a building's sustainability
- incorporate wire/cable management systems in open-plan spaces to allow for flexibility, aesthetic preferences, and future technology.

Before discussing these new standards and their impacts, an overview of poke-thru devices and floor boxes is in order.

Poke-Thru Devices

Poke-thru devices provide capacity and flexibility to meet the demands of open plan spaces without compromising workplace aesthetics. They bring power, voice, and data precisely where it is needed without impacting the fire rating of the slab. As a result, poke-thru devices are an excellent choice for new construction and retrofit applications.

[illegible]

Poke-thru devices are installed in holes that have been core-drilled through concrete floors. The only limitations are the presence of major structural components such as beams, and the rare instances where there is no available space for access from the floor below. The UL fire resistance directory details the standard for poke-thru penetrations as a "minimum of 2 ft. on-center and not more than 1 insert per 65 sq. ft. of floor area in each span."

Poke-thru devices offer maximum design flexibility for open office space. Moreover, they can also be used for partitioned and modular offices, as well as specialized spaces, such as reception areas, conference rooms, and training centers. The placement of activations is not constrained by partitions or by the grid pattern of an infloor wire and cable management system. Among commonly installed wire and cable management systems, poke-thru devices typically have low initial installation cost.

The desire for improved aesthetics has resulted in systems that offer flush and recessed activations that are very nearly invisible, yet accommodate more receptacles and communications ports than older, low-capacity fittings.

This poke-thru device meets scrub water standards and can be installed on a tile floor. Until recently, these devices were restricted to carpeted surfaces.

Fire Safety

Prior to the development of the newest generation of fire-rated poke-thru devices, core drilling of concrete floors required the installation of fire stopping material to maintain the floor's fire retardant capabilities. Unfortunately, these operations could not always be adequately policed, and code enforcement agencies moved to limit the practice. The solution was to incorporate fire stopping material into the fitting itself, guaranteeing that each penetration maintains the slab's fire rating.

The key to a poke-thru serving as a fire stop is intumescent material around the conduit stem at the slab level. When exposed to high temperatures, the material expands to fill any space between the fitting and the floor slab. In the event of a fire, the slab penetration is quickly filled by the expanding intumescent material, effectively blocking flames and heat and maintaining the slab's fire rating.

The fire classification also identifies the number and size of conductors allowed in each poke-thru. Unlike standard conduit and raceway, the number and size of the conductors allowed in poke-thru devices is determined through fire testing procedures determined by Underwriters Laboratories Inc., and not by calculating cable fill percentages. Therefore, when choosing a poke-thru device, refer to the manufacturer's allowable copper cross sectional area for each poke-thru device.

Communications Cabling

Manufacturers of poke-thru devices have responded to the growth and increased complexity of structured cabling systems by developing devices that easily accommodate high-performance copper and fiber optic cable. These devices feature separate channels for electrical wiring and low-voltage cabling. In poke-thru devices that support both electric service and low-voltage cabling, the electric wires are run through the conduit stem of the fitting while low voltage cabling runs outside the conduit stem through holes in the intumescent rings. In the event of a fire, these holes, like the slab penetration itself, are filled by the intumescent material.

Poke-Thru Advantages

Since poke-thru devices can be put in place at almost any time in the construction cycle after the concrete has been poured, there is a larger window of opportunity to accommodate late design changes and fluctuations in the construction schedule. Because wiring and cabling is not located in the slab, more precise measurements are possible -- when walls and other interior components are in place – to locate workstation activations.

Floor boxes that meet the water exclusion standard are available for use on tile, terrazzo, and wood surfaces.

Floor Boxes

Floor boxes provide cost-effective wire and cable management in low- to moderate-density open space areas. They are designed to fit almost any project – and any décor. There are several factors to consider before selecting a floor box.

Job Specific Conditions

When choosing a floor box, it is important to consider the specific job requirements. If the application is on-grade, a cast iron floor box or an approved on-grade stamped steel floor box must be used. If the application is above-grade, a stamped steel box may be appropriate. Nonmetallic floor boxes can be used as a cost-effective alternative to stamped steel. Floor boxes are available in both shallow and deep versions to correspond to the depth of the concrete pour. When selecting a box, be certain that it has the required space and/or depth to accommodate power and communication requirements and can support covers that match the project's aesthetics.

Workstation requirements

Start by determining which services are required at the workstation. If the workstation requires power but not communications, then a single-gang box is needed. If multiple services are required, multi-gang boxes must be used in order to maintain complete separation of power and communications services. It is also necessary to determine how many communications jacks are needed, and whether they will be mounted flush or recessed.

Aesthetics

After determining workstation requirements, choose floor box covers – the only visible component of the assembly. Floor boxes are available with a wide array of covers that provide a uniform appearance throughout the job. Round and rectangular covers provide design options, as do cover materials such as brass, aluminum, zinc, and polycarbonate. Depending on the material selected, manufacturers may offer a range of colors.

Scrub Water Exclusion Standards

Beginning June 20, 2003, new standards under UL514A will require that all concrete floor box covers and poke-thru devices meet a carpet water exclusion test similar to one currently required for tile applications. Water exclusion tests are designed to simulate typical maintenance procedures such as mopping tile floors and shampooing carpets.

A poke-thru device allows network access in an informal meeting space.

UL recognizes that many carpets are shampooed frequently, resulting in a greater likelihood of scrub water penetrating floor box covers and poke-thru devices. The new standard is designed to ensure that these products prevent water from entering their electrical compartments. [Standards for the water exclusion tests are included in the additional reading material at the end of this section.]

These standards have significant implications for the specification community, as well as for building owners and facility managers. At present, only approved floor box covers may be used in tile applications; non-approved covers and all poke-thru devices are restricted to carpet applications. A significant result of the new standards – and the redesign of poke-thru devices – is that for the first time poke-thru devices can be installed on tile surfaces.

Meeting the Requirements

There were two primary approaches to meeting the requirements of water exclusion tests: designing new parts to fit together more closely and incorporating gaskets in lids, covers, and other openings.

Poke-thru devices

Poke-thru devices have multiple openings where water can enter. The primary design objective was to make these openings watertight within the parameters of the water exclusion tests. Further, the newest poke-thru devices are distinguished by individual slide covers – a design improvement over older-generation flip lids – that snap in place over power receptacles to prevent dirt and debris from entering the system. Reverting to flip lids and installing gaskets on them would have been a relatively simple solution, but end-users appreciate the advantages of slide covers, including long-term durability and ease of use. Instead, engineers designed a specialized gasket that remains in contact with the slide cover at all times and in all positions. The gasket material provides the proper balance between water resistance and the ability to spring back into the closed position.

Floor boxes

Infloor activation covers were reviewed and redesigned with new parts that fit together more closely. While the covers of some floor boxes, such as smaller flip lids, were already approved for tile applications, others were not. These lids were fitted with gaskets that surround the lid when it closes. Of particular concern were large floor box lids that have cut-outs for wire and cable egress. Here, specialized silicone gaskets were designed to fill these gaps, enabling the lid to meet water exclusion requirements.

Exceeding the Requirements

The standards require water exclusion only on the electrical side of a poke-thru device or floor box. (Under the revised standards, water will still be allowed to enter communications areas so long as it does not leak into the electrical side). Exceeding this requirement to exclude water from communications portions of the devices offers important benefits. Although water entry into communications compartments is not considered a high risk for fire and/or shock, the presence of moisture can damage electronic components. A more practical advantage, however, is that gaskets that are designed to deter water also keep out dust and debris that can degrade the performance of sensitive electronic systems.

In the case of poke-thru devices, the slides that cover electrical receptacles are similar to those on communications ports, so it is possible to exceed the requirements and provide water resistance for all device compartments. Similarly, floor box covers also incorporate gaskets on cut-outs for communications cables.

Implications of Poke-Thru and Floor Box Redesign

Greater specification flexibility

Redesigning poke-thru devices to meet the new carpet water exclusion standard presented an opportunity to extend the use of these wire and cable management systems beyond carpet applications. The modifications mean that these devices can be used in either carpet or tile settings. Poke-thru devices that are currently installed can be modified to meet the new standard by replacing the device head. This may be especially attractive where replacing carpet with tile has been impractical due to the presence of existing poke-thru devices.

Designers who opt for floor boxes will have a greater degree of choice in the type of box and cover that is installed. Each floor box cover will be suitable for either carpet or tile. Additionally, the new covers will fit all existing installed flanges.

Aesthetics

Although the changes being brought on by the water exclusion standard may appear to be only functional, there are aesthetic considerations as well. Designers will be assured of uniformity since the same poke-thru device or floor box cover can be installed with carpet or tile.

*Available in a variety of sizes and configurations,
floor boxes provide access to receptacles and data ports.*

Pathway Options

Poke-thru devices and floor boxes are but two types of wire and cable management pathways. TIA/EIA-569 Commercial Building Standards for Telecommunications Pathways and Spaces defines horizontal pathways as including underfloor, access floor, conduit, tray and wireway, ceiling, and perimeter systems. The conventional – if somewhat outdated – view of premises wiring is cable in the wall and jacks in permanent outlets. Wire and cable management pathways provide greater workstation flexibility and can help to improve a building's sustainability. [More information on contributing to sustainability is included in the Additional Reading material at the end of this article.] In addition, these systems have been designed to be as physically and visually unobtrusive as possible. Wire and cable management systems can be grouped into four categories.

Open space systems, such as floor boxes and poke-thru devices, serve areas that are not adjacent to partitions. These systems provide direct access to cabling or they can feed into modular office furniture. Architectural columns are another option for open space applications.

Infloor systems include underfloor duct and raised floors. Underfloor duct systems provide support and security for cabling in reinforced concrete and steel constructions. Raised floor boxes offer convenient access to data/communications cabling.

Perimeter systems route wiring and cabling securely along walls. These systems are often specified for conference rooms, offices, classrooms, and training centers. Unlike with conventional conduit, cabling that is laid into a perimeter system remains easily accessible at all times. These systems are also easy to expand or reconfigure.

Overhead systems offer a high degree of flexibility, both in terms of locating the components and accessing the cabling contained within them. Cable trays are available in a variety of styles, including center spine, solid bottom, and ladder. Although cable tray was historically installed above drop ceilings, it is increasingly showing up in open-ceiling applications.

[A review of the options for open-space wire and cable management systems is included in the Additional Reading material at the end of this article.]

Open space wire and cable management enable this office to be readily reconfigured.

Water Exclusion Tests

Water exclusion testing for carpet and tile applications is performed with the device in the closed position (nothing is plugged in, and no wires or cables exit the device). In both tests, a mixture of soap and water is used. According to the standard, "Scrub water shall not enter a floor box at the floor level through the box cover, cover flange, or other openings." [Note: the term "floor box" includes poke-thru devices.]

The test set-up is described in 32A.2.2:

> "A floor box assembly is to be installed in a section of floor constructed to represent an installation as intended by the manufacturer. The cover plate is to be fully secured. Sealing compound is to be used around the perimeter of the floor box or cover flange to retain the soap solution on the floor assembly. A minimum 1/4-inch (6.3 mm) high dam is to be constructed around the floor assembly."

The test for tile applications is described in 32A.2.3:

> "A scrub water solution is to be prepared by mixing 4 tablespoons of floor cleaning soap with 1.0 gallon (3.79L) of water. The solution is to be poured over the cover plate of the floor box so that it collects to a depth of 1/8 inch (3.2 mm) above the floor assembly within 10 seconds or less. The solution is to remain on the floor assembly for one minute. The solution is then removed and the interior and under the cover of the floor box is to be examined for entrance of scrub water."

The test for carpet applications is described in 32A.2.4:

> "A scrub water solution is to be prepared by mixing one tablespoon of floor cleaning soap with 1.0 quart (0.94 L) of water. The solution is to be poured over the cover plate of the floor box within 10 seconds or less. The solution is to run off the top and sides of the cover. The cover is then to be dried. The interior and under the cover of the floor box is to be examined for entrance of scrub water."

Performing a scrub water exclusion test on a floor box cover.

Click for Additional Required Reading

As part of this CES learning activity, you are required to read additional material on water exclusion tests as well as about wire and cable management systems and examples. To access the material online, go to www.wiremold.com/AIACES.

Learning Objectives

At the end of this article you will be able to:

- interpret how poke-thru devices and floor boxes—and their use on various surfaces—will be impacted by the new standards for scrub water exclusion testing
- plan wire/cable management systems that contribute to a building's sustainability
- incorporate wire/cable management systems in open-plan spaces to allow for flexibility, aesthetic preferences, and future technology.

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 250. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. New standards under UL514A (beginning June 2003) are to ensure poke-thru devices:

A: a. Meet minimum fire-rating requirements

b. Separate the electric wiring from low-voltage cabling

c. Prevent water from entering electrical compartments when used on carpet applications

Q: 2. The UL fire resistance directory details the standard for poke-thru penetrations as a minimum of 2 ft. on-center and not more than 1 insert per how many square feet of floor area in each span:

A: a. 1 insert per 10 sq. ft.

b. 1 insert per 25 sq. ft.

c. 1 insert per 65 sq. ft.

d. 1 insert per 100 sq. ft.

Q: 3. The fire classification of poke-thru devices is determined by calculating cable fill percentages.

A: a. True

b. False

Q: 4. A significant result of the new standards for water exclusion tests and redesign of poke-thru devices is that now they can be used on:

A: a. Carpet surfaces

b. Tile surfaces

c. Wood surfaces

Q: 5. The new standards require water exclusion:

A: a. Electrical side only

b. Communication side only

c. Both electrical and communication areas

Q: 6. When comparing wire and cable management system options in an open-plan space, which has the highest installation cost?

A: a. Access floor

b. Poke-thru

c. Underfloor duct

d. Floor boxes

Q: 7. When comparing wire and cable management system options in an open-plan space, which has the highest rating for aesthetics?

A: a. Floor boxes

b. Architectural columns

c. Access floor

d. Poke-thru

Q: 8. When comparing wire and cable management system options in an open-plan space, which has the lowest life cycle cost?

A: a. Cellular Deck

b. Cable Tray

c. Underfloor duct

d. Poke-thru

Q: 9. Cable tray is always installed above dropped ceilings to hide cabling.

A: a. True

b. False

Q: 10. Compared to in-the-wall wiring, cables in wire and cable management systems can easily be removed when technology is upgraded.

A: a. True

b. False

11. Risks to waiting until late in the design process to consider the wire and cable management include:

A: a. Increasing the costs and difficulty of installing and changing cabling systems

b. Reducing building flexibility

c. Limiting options for future technology growth

d. All of the above

12. Specifying a high-capacity distribution system in place of planning a wire and cable management system is not the most cost-effective long-range solution.

A: a. True

b. False

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Repetition of architectural precast pieces on Bannockburn Centre, Bannockburn, IL, afforded the opportunity to increase intricacy and develop an elegant yet economical skin. Architect: Wright Associates, Ltd., Chicago

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Use the learning objectives below to focus your study as you read **Designing with Architectural Precast: Enhance Your Next Project. Achieve Design Goals. Control Costs.** To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 195, then follow the reporting instructions on page 250 or use the Continuing Education self report form located at *architecturalrecord.com.*

Learning Objectives

At the end of this article you will be able to:

- Explain how the master mold can make production more economical
- Learn what effect repetition has on the panel square foot cost
- Know how piece/panel size impacts cost
- To control costs through timing of mix design and material

Understanding the architectural precast manufacturing process can help achieve design goals and control costs. Many variables need to be considered to determine what a custom architectural precast project will cost. All engineering, production, delivery and installation costs must be compiled for each specific project to derive an applicable budget.

During a project's conceptual stage, the designer has many items to consider. These include material selection, textures, surface geometry, cross section, unit repetition and erection methods. The custom, sculptured designs that are possible with precast concrete may be achieved within budget by selecting economical aggregates and textures combined with repetitive units and effective production and erection details. A local precast manufacturer can assist with preliminary design and budget estimating early in the project's design phase.

Working with a precaster on the specifics will help determine a final budget that is more accurate than a ballpark price per square foot. A cost per square foot is rarely accurate because square foot quantities are calculated differently from precaster to precaster, general contractors, and architects depending on the take-off procedures. Also, total work scope requirements such as site restrictions, work scope inclusions, and detail manufacturing requirements are initially unknown.

A lump-sum budget price from local precast manufacturers, submitted in writing including assumptions, will minimize surprises on bid day. As a project evolves from preliminary sketches through working drawings, the precasters should be informed of all changes to ensure the budget prices remain valid. The key factors in designing economically with architectural precast are the repetitiveness of pieces, average piece size and erection efficiency and understanding material costs.

Repetition and Mold Concept

A key element to cost-effective production is to minimize the number of molds and mold changes and to maximize the number of castings from each mold, particularly if the molds have shape. Efficiency is achieved by making it possible for similar, if not identical, shapes to be produced from the same basic (master) mold and by minimizing the time required to disassemble a mold and reassemble it for the manufacture of the next piece.

Shape is the major focus of the Jefferson County Justice Center, Golden, Co. More than 400 complex molds with 30 different radii were constructed to produce over 4,000 precast components that form the shell for the structure. Architects: C. W. Fentress and J. H. Bradburn & Associates, Denver

Since molds are an expensive item, tooling costs should be spread over as many units as possible. The more elements that can be cast with any one given mold, the more economical the project becomes.

Although every project will have some atypical conditions, the most successful and cost-effective projects maximize the repetition of elements. This means that careful planning is necessary to achieve good repetition without sacrificing design freedom.

Prior to designing wall panels, the architect should visit an architectural precast concrete manufacturing plant, as well as projects underway. This enables the designer to become more familiar with manufacturing processes, installation procedures and most importantly, establishing realistic expectations for the finished product. Such elements as the fabrication of molds, challenges to casting and finishing specific shapes, handling methods at the plant and jobsite, approaches for connecting panels to a structure and establishing acceptable color ranges are important to fully understand precast and maximize its potential.

Adding more intricate features introduces cost premiums to a project. Projecting cornices, bullnoses, form liners, bottom and/or top returns and curves are the most typical features to be added. The exact size, shape and locations are the designer's options. However, repetition must be considered when applying these design features. Considerable cost will be added if the location of these features within a mold will be changed frequently.

On the other hand, these intricate features can be added at a minimal cost if they are used repetitively in the overall design. The point behind designing repetitive pieces is to amortize engineering and mold costs effectively. As many pieces as possible should be designed to be cast in the same mold and produced from a single shop drawing. Wood and fiberglass molds will last for about 20 to 30 castings before they must be completely refurbished or replaced.

Mold Costs

Mold cost can range from hundreds of dollars to thousands of dollars per mold. The cost difference depends on mold size, complexity and materials used.

The architect can make a significant contribution to economic production by designing precast concrete panels with knowledge of the "master" mold concept. This involves fabricating one master mold (with its appropriate additional tooling) that allows a maximum number of reuses per project. Units cast in this mold need not be identical, provided the changes in the units can be accomplished through pre-engineered mold modifications.

A master mold can include numerous design elements such as bullnoses, cornice details, reveal patterns or window openings. Once in place, the design elements should be consistent (repetitive) from piece to piece, however, individual castings do not have to be the same size, color or texture.

It is relatively easy to alter a mold if the variations can be contained within the total mold envelope by use of bulkheads or blockouts rather than by cutting into the mold surface. When a large number of precast concrete units can be produced from a single mold, the cost per square foot will be more economical.

Other Forming Considerations

In addition to considering maximum form reuse, the final design should take into account ease of removing the piece from the forms. This allows the precaster to efficiently meet schedules and budgets without impacting the design aesthetics.

The optimum economy in production is attained if the panel can be separated from the mold without disassembling the mold. This is done by providing slope (draft) on the sides of all openings and edges and by eliminating or minimizing forming the panel's back face (upside in the form). Drafts are a function both of shape and production techniques.

Generally, the minimum positive draft that will allow the unit to be stripped from the mold easily is one inch in one foot (1:12), but 1:8 is preferred. This draft should be increased for narrow or delicate units where the suction between the unit and the mold becomes a major factor in both strength requirements and reinforcement of the unit. In general, the greater the draft, the more economical and uniform the finish.

All architectural precast panels are normally cast indoors and faced down to give the maximum aggregate consolidation at the panel surface and to achieve the smoothest finish. Two-sided precast pieces (front and back) requiring identical appearances should be avoided as facing aggregate will need to be seeded on the top surface resulting in possible texture variations.

Effect of Repetition On Panel Square Foot Cost

(Example panel is 200 s.f. Mold Cost = $3,000)

Use mold 1 time	$15/s.f.
Reuse 10 times	$1.50/s.f.
Reuse 20 times	$0.75/s.f.
Reuse 30 times	$0.50/s.f.

A common production method is to make returns that give the appearance of thick, massive panels which create significant shadow features to the facade. This procedure is a two-part pour. The return piece is produced on Production Day One. On Day Two, the return piece is removed from its form and is connected to a master mold. The return is cast monolithically to the master piece.

A quirk should be provided in the corner so the return is not poured to a point.

Panel Size

Precast pricing is determined by the size of the pieces and repetition. Pricing is more dependent upon large pieces than upon a large project. For example, a 100-piece project of large panels can be less expensive per square foot than a 1,000-piece project of much smaller panels.

The more pieces the project has, the more labor hours it will take to engineer, cast, strip, finish, load, deliver and install the panels. It is best to make precast units as large as possible within normal manufacturing and shipping limitations. A project's average piece size should be at least 100 to 125 square feet.

Usually the optimum panel size is dictated by size and weight limitations imposed by transport and site cranage capacity. Close collaboration between the architect and a precaster is required during the early stages of a building's design to determine the optimum size.

Larger panels also shorten a project's schedule, reduce the amount of caulking needed, offer better dimensional controls and require fewer connections. Large units are preferable unless they lack adequate repetition or incur cost premiums for transporting and erecting.

The standard flatbed trailer payload in many areas is 20 to 22 tons with a product size restriction of 8 foot in width, 8 foot in height and 45 foot in length. The height can be increased to about 10- to 12-foot without incurring special permit load costs. Permits may be required at 12 foot depending on angles of frames or length of well between the wheels for an A-frame load. Panels up to 15 foot 8 inches can be transported only on specially built tilt-frame trailers with certain restrictions.

Designing larger panels, even though they may carry a hauling premium, may be the most cost-efficient. For example, an office building with 30- by 30-foot column spacing requires fewer columns, fewer precast panels and yields a more wide open interior than the same building with 20- or 25-foot column spacing. The cost premium (if any) to haul two 30-foot long panels versus three 20-foot long panels usually can be overcome by cost savings in other manufacturing areas like, engineering production and installation.

Material Costs

Cement content, aggregates, pigment dosage, form surface, surface finish and mix/finish complexity are added to labor costs to formulate finished precast unit costs.

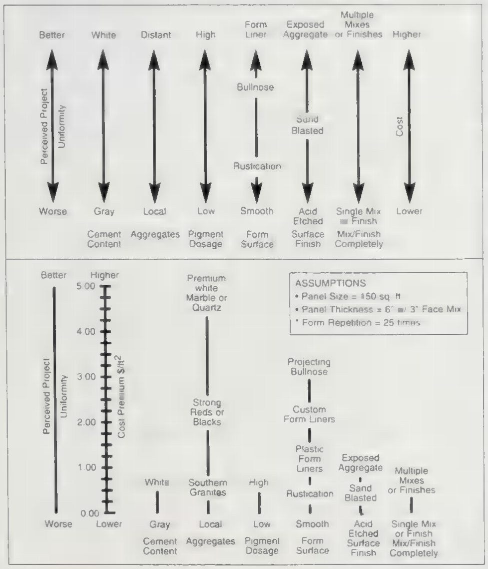
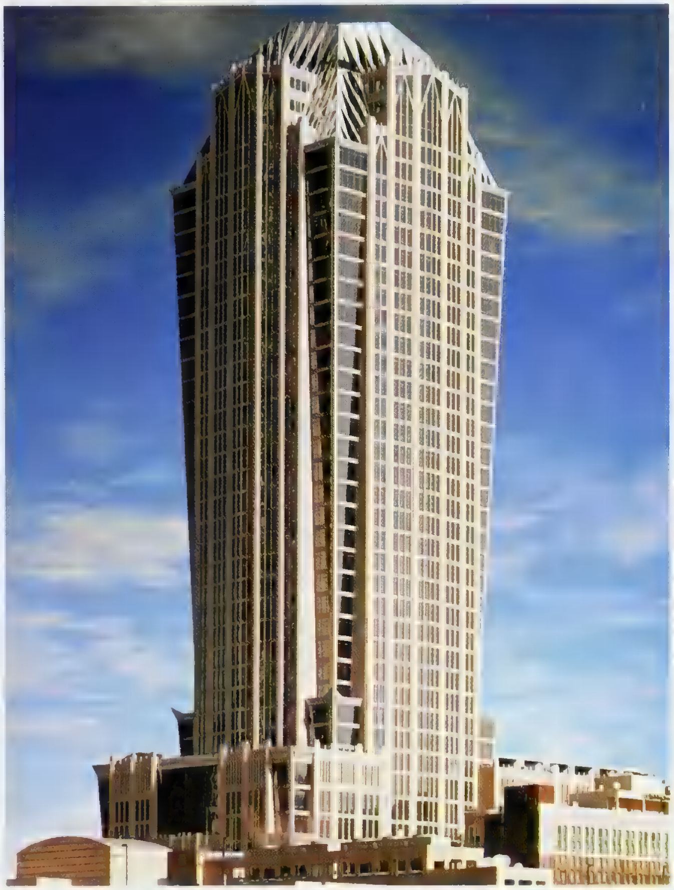


Figure 1



Unique colors were used in the architectural mix designs for the Hearst Tower, Charlotte, NC to create dramatic color variations while intricate detailing was used to demonstrate significant relief. Architects: Smallwood, Reynolds, Stewart, Stewart & Associates, Inc., Atlanta

Panel manufacturing costs (materials plus labor) are other major factors in finished precast unit costs. Material factors and labor processes that cost more, but at the same time increase visual uniformity, are shown in Figure 1. This data is based on the cost structure of a typical Midwest plant. Good product color and textural uniformity at moderate costs can be obtained by the designer by selecting an optimum combination of items shown in Figure 1.

For reasons of appearance and cost, aggregate choice is an important factor. Aggregate cost is determined primarily by the distance of the quarry to the manufacturing plant. Most aggregates cost the same to remove from the earth and to crush to the appropriate size. The trucking cost from the quarry to the plant is the principal cost variable. In order to minimize mix cost, a designer should discuss aesthetic requirements such as aggregate color options and their associated costs with a local precaster.

A particular aggregate's cost should be calculated only for the amount of face mix used. Most precast panels are produced with $^1/2$ face mix thickness (usually 2 to 3 inches) and $^1/2$ grey back-up mix. Panels with large projections and returns will increase the face mix quantity required. Window setbacks may dictate the thickness of the face mix. If the panel configuration is such that little or no back-up concrete can be used then the cost of the facing aggregate can have a significant affect on the cost of the panel.

Precasters can modify mix ingredients depending on the selected finish in order to lower material costs. For example, some acid-etched finishes will expose only the coarse aggregate tips. Thus, expensive coarse aggregates can be minimized or eliminated since they will not be seen. Sandblasting dulls the coarse aggregates, therefore, less expensive aggregates may be selected. A bush-hammered finish will give a similar appearance to sandblasting without dulling the aggregates. Exposed aggregate or retarded finishes tend to be more expensive because they require colorful coarse aggregates. This procedure exposes the aggregates and reveals their natural beauty.

By incorporating demarcation features, multiple mixes can be incorporated in a single panel. A designer can also achieve different colors and textures from a single precast mix simply by varying the finish treatment. This multiple- finish

The 20-story Jefferson Pilot headquarters in Greensboro, NC was designed to emulate the terra-cotta façade of the adjacent Romanesque style building constructed in 1924. Architect: Smallwood, Reynolds, Stewart, Stewart & Associates , Inc., Atlanta

technique offers an economical yet effective way to heighten aesthetic interest.

It is desirable to develop the mix design before the project goes out for final pricing. Most precast manufacturers are eager to assist the architect in developing a control sample as early as possible. The best method in selecting a sample is to visit the precast plant to view a multitude of samples and finished panels stored in the yard. Alternatively, a designer can refer the precaster to an existing example and give them a piece of natural stone (or other material) to match.

Asking a precaster to create several different samples is common and encouraged. Once a project's 12- by 12-inch sample for each color and texture has been finalized, the designer should make the sample available to all interested precasters to view and photograph. In some cases, multiple samples are made so that each precast bidder can have a sample. Listing the exact mix ingredients in the specification is not necessary.

The cost of reinforcement is typically not significant in architectural precast concrete. An exception is the choice of finish of the connection hardware and reinforcement. The cost of galvanized or epoxy-coated reinforcement is substantial, and is not normally required. Additionally, it is not a substitute for adequate concrete cover or concrete quality. Connection hardware cost is governed mainly by structural load requirements (including special structural functions and possible earthquake considerations) and the building's structural system. Hardware costs may be minimized by making the precast concrete units as large as is consistent with the size limitations discussed earlier in this article.

Also where structural steel is supporting precast, connection hardware attached to the structure and bracing to resist torsion of structural frame should be provided and installed by the structural steel fabricator (using precaster's drawings and design) to avoid the high costs of field welding.

Four lateral and two gravity connections are the minimum required for most precast concrete units regardless of size. The labor cost of producing and handling small individual pieces of hardware normally exceeds the material costs, thus increasing the relative cost of hardware for small units.

The precaster will develop the precast connection details. However, the exact connection methods do not need to be shown on the bid documents.

The bid documents should only show connection locations, conceptual methods and structural loading requirements. The precaster is ultimately responsible for precast connection details and performance.

Precast Economies Versus Other Materials

Architectural precast offers many cost advantages over other cladding materials. Precast is produced all year-round in a controlled, cost-efficient production environment. In addition, precast can be installed year around even in harsh winter conditions. This eliminates the need for costly winter weather protection and contributes significantly to compressing the overall building schedule.

Architectural precast can enclose the project quicker than any other cladding material. Typically over 1,000 square feet can be installed each day (10 pieces per day at 100 square foot each). Precast's installation speed can shave months from a construction schedule, thus reducing construction financing cost.

Precast spandrel panels commonly are used as a vehicle impact restraint in parking structures in addition to providing a perimeter design feature. Doing so eliminates the need for an upturned cast-in-place concrete beam or a cable system.

Precast panels can span great distances (20 to 60 feet) and be connected directly or adjacent to structural columns. This advantage allows the designer the opportunity to control the gravity loads to reduce the structural framing costs.

Precast can be stacked onto a foundation. This way, all precast gravity loads of a multi-story building can be transferred vertically through each panel and ultimately onto the foundation. Where this design is employed, the structural steel frame resists precasts' wind loads only, permitting the frame steel to be lighter and less expensive. This design must allow for building drift.

More than 3,000 warm buff colored architectural precast panels articulated in an ashlar pattern were used to clad Northwestern Hospital in downtown Chicago. Architects: Ellerbe Becket Inc., Minneapolis; Hellmuth, Obata & Kassabaum, St. Louis; VOA Associates Inc., Chicago.

In high-rise construction, vertical precast panels can span multiple floors. Multiple vertical floor spans of precast panels require gravity loads to be supported at only one floor per panel (every two or three floors). That way, the majority of the floors can be designed without the need to support the gravity loads of the exterior skin, reducing the overall structure's cost. This approach may not be practical in high seismic zones due to drift requirements.

Routinely, precast panels provide support for gravity and wind loads of other material, such as windows, curtain walls, storefronts, and sometimes even brick. This capability reduces the framing cost of these adjacent cladding materials, and reduces structure costs.

More expensive traditional materials can be replaced with cost-efficient architectural precast. Precast can be colored and textured to mimic natural stone (granite, marble, limestone, sandstone, or slate).

Or, these materials can be cast integrally into the exterior face of precast panels. This latter fabrication method reduces the contractor's financial risk by assigning the stone responsibility to the precast manufacturer. In addition, time-consuming and costly on-site stone installation costs are completely eliminated.

More and more, brick-faced precast panels are being substituted for field-laid masonry for many reasons: cost savings, brick material shortages, qualified mason shortages, owner's schedule requirements and winter construction.

Summary

Early in the design phase, the designer should evaluate all the factors influencing the economics of a particular architectural precast concrete project.

To arrive at an optimized solution, the designer will need to seek early consultation with a local precaster. The precaster should be challenged to suggest options for creating a good economical design that also satisfies the designer's aesthetic requirements.

If possible, the designer should visit manufacturing plants, as well as projects under construction. This way the designer can become familiar with the manufacturing and installation process. In order to optimize the cost of precast concrete, such tasks as mold fabrication, challenges to casting and finishing specific designs or shapes, relative material costs, handling methods at the plant and jobsite, and approaches for connecting panels to a structure are important to fully understand.

Click for Additional Required Reading

As part of this CES learning activity, you are required to read additional online material on designing with precast concrete. To access this free material, go online to www.pci.org, click on the **Designer's Knowledge Bank** logo and register. Click **Advanced Search**, check all market category boxes and enter the words **Designer's Notebook** in the Keywords Search block. You'll be offered 12 Designer's Notebooks and several articles. You can download the entire series and the articles free of charge.

About PCI (Precast/Prestressed Concrete Institute)

The Precast/Prestressed Concrete Institute is a unique organization of producers, suppliers and professionals. PCI is dedicated to fostering greater understanding of the design and use of precast and prestressed concrete. It also encourages and recognizes excellence in the manufacture and use of these materials.

Our professional members guide the Institute's efforts in product innovation, new technology adaptation, design methods development, training and quality assurance. Since its inception in 1954, PCI has been a dynamic force in the steady growth, and the current position of this expanding industry.

Learning Objectives

At the end of this article you will be able to:

- Explain how the master mold can make production more economical
- Learn what effect repetition has on the panel square foot cost
- Know how piece/panel size impacts cost
- To control costs through timing of mix design and material

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 250. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. The use of a master mold can make production more economical by:
A: a. Allowing precast manufacturer a greater variety of material selection
b. Allowing a maximum number of reuses per project
c. Allowing for larger sized precast units
d. Controlling the development of the mix design.

Q: 2. When reusing a master mold, the individual castings must have the same size, color, and texture.
A: a. True
b. False

Q: 3. Suppose a panel is 100 s.f. and each mold costs $2,000. If the panel is used once, the cost is $20/s.f. Reusing the mold 30 times can reduce the panel square foot cost to:
A: a. $2.00/s.f.
b. $1.00/s.f
c. $0.67/s.f.
d. Has no effect on square foot cost.

Q: 4. A project's average piece/panel size should be:
A: a. Less than 100 square feet
b. 100 to 125 square feet
c. 125 to 150 square feet

Q: 5. The benefits of using larger panels in a project include all except:
A: a. shorten a project's schedule
b. reduce amount of caulking needed
c. reduces hardware costs
d. cost premiums for transporting and erecting

Q: 6. The best time to develop the mix design is after the project goes out for final pricing.
A: a. True
b. False

Q: 7. Aggregate cost is determined primarily by:
A: a. Distance between quarry and manufacturing plant
b. Cost of removal from quarry
c. Cost of manufacturing process to crush to the appropriate size

Q: 8. Expensive coarse aggregates can be minimized or eliminated to save costs on except which:
A: a. Acid etched finishes that expose only the tips
b. Bush hammered finishes
c. Exposed aggregate or retarded finishes

Q: 9. The cost of reinforcement is typically not significant in architectural precast concrete.
A: a. True
b. False

Q: 10. The exact precast panel connection methods should be shown on the bid documents.
A: a. True
b. False

PRECAST/PRESTRESSED CONCRETE INSTITUTE

209 West Jackson Boulevard
Chicago, Illinois 60606-6938
Phone: 312-786-0300 / Fax: 312-786-0353
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USG Presents:

Gypsum Cavity Shaft Wall Systems: The Standard for Life Safety in Low-, Mid- and High-Rise Construction

By: **Robert Grupe**
Director, Architectural and Technical Solutions, United States Gypsum Company

Dean Updegrove
Product Marketing Manager, United States Gypsum Company

Phil Shaeffer
Manager, Codes and Technical Support, United States Gypsum Company

WITH THE ADVENT OF HIGH-RISE CONSTRUCTION, VERTICAL SHAFT WALL systems have become a critical element underlying successful building design. These walls, which house elevators, stairwells and mechanical utilities, enable safe occupant egress and ensure the reliable flow of air, water, heating, cooling and other essential utilities throughout a building.

From a life safety standpoint, shaft walls are the most important walls in any building. In the event of a fire, shaft walls ensure that occupants have a means to exit the building (via stairwells) and that firefighters can access the building (via elevators and stairwells). In addition, the type of shaft wall constructed and its location impacts the amount of usable space in a building. Lastly, by including abuse-resistant design into shaft wall specifications, these walls can positively affect building life cycle costs.

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Use the learning objectives below to focus your study as you read **Gypsum Cavity Shaft Wall Systems: The Standard for Life Safety in Low-, Mid- and High-Rise Construction**.

To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 201, then follow the reporting instructions on page 252 or use the Continuing Education self report form located at *architecturalrecord.com*.

Learning Objectives:

At the end of this article you will be able to:

- Understand the essential performance and design criteria used to select and specify cavity shaft walls;
- Know how gypsum drywall shaft walls perform and install;
- Create gypsum drywall shaft wall design specifications optimized for abuse resistance and moisture control.

To properly specify shaft walls for low-, mid- and high-rise construction, architects must know the types of systems available, as well as the performance and installation attributes of each. Based on this knowledge, architects can then select – and specify – the system that best meets specific project life safety and structural performance requirements.

A Brief History

Prior to the advent of high-rise construction, the traditional materials of choice for shaft walls included masonry, structural clay tile and gypsum tile. In 1931, for example, the architectural firm of Shreve, Lamb and Harmon specified masonry shaft walls for the Empire State Building, which is considered by many to be the first modern high rise. In that same year, Graham, Anderson, Probst and White selected gypsum tiles for the construction of the 4-million-square-foot Merchandise Mart in Chicago.

However, as buildings reached farther into the skies, the search for lighter, more elastic shaft wall systems became a priority. Traditional hard and brittle materials, such as structural clay and gypsum tiles, limited the design capabilities of shafts in modern high-rises and placed constraints on the finished spaces within those buildings. In response to these needs, gypsum panel shaft wall systems were introduced in the 1960s. The first project to use these gypsum panel systems was a small office building in Los Angeles. This application was followed by a gypsum panel installation on the Central National Bank Building (designed by Charles Luckman and Associates) in Cleveland, and then at the U.S. Steel

Gypsum drywall shaft systems are now considered the standard for low-, mid- and high-rise construction.

Building (designed by Harrison Abramovitz and Abbe) in Pittsburgh.

Based upon these early efforts, designers today have much more flexibility in both cavity shaft wall material selection and system design. Material choices now include poured-in-place concrete, masonry, gypsum plaster, metal stud drywall or specially designed gypsum drywall shaft wall systems. Given certain design parameters for the shafts and the end use of the structure, any of these may be appropriate for a given building. (See *Shaft Wall Performance Comparisons* table included in the additional online reading materials.) But determining which system is best for a specific structure requires careful research.

Selecting the Right System

The shaft wall selection process begins with a review of the key performance and design criteria that the walls will be expected to meet. While life safety is the overriding concern for all applications, specifiers should identify and prioritize the additional system attributes that best meet the remaining performance criteria and the other needs of the client. Following are some of the more important factors to consider.

Life Safety – *This is the most important consideration for all projects.* The life safety attributes of a shaft wall system protect building occupants, support the interests of the client and help manage the designer's risk. As such, the fire endurance of the system (one to four hours) should be verified by an independent testing agency such as Underwriters Laboratories (UL), and the primary system components (such as gypsum panels) should be classified by the same agency. Only thoroughly tested systems can ensure long-term performance of the shaft wall itself and key interfaces such as elevator doors, fire dampers and stairwells.

Wall Thickness – The thickness of the shaft wall impacts the square footage of usable/leaseable floor space. Gypsum shaft walls are usually the thinnest systems available and thus deliver the maximum usable floor space.

Weight – The lighter the shaft wall, the less dead load on the structure. Gypsum drywall shaft systems offer benefits here as well. They are the lightest-weight systems available.

Elasticity – Elasticity accommodates structural dynamics such as building sway, drift and floor movement, as well as the cyclical nature of loading from elevators and seismic events. Elastic and ductile shaft walls are normally preferable to stiff and brittle walls.

Abuse Resistance – Abuse-resistant shaft walls stand up to everyday damage and thereby reduce life cycle costs. The abuse-resistance of gypsum drywall shaft walls can be enhanced through the use of special abuse-resistant panels, surface coatings and/or veneer plaster finishes.

Speed of Installation – Faster-installing systems help streamline scheduling and support good design and project management practices. Again, gypsum drywall shaft systems offer significant benefits in this area. They install quickly and allow construction from one side only (the floor side). This eliminates the need for scaffolding within the shaft and helps create a safer working environment.

By evaluating and ranking the relative importance of each of these factors, specifiers are able to zero in on the particular type of shaft wall system that best meets the life safety and performance needs of the building, as well as other design and aesthetic priorities established by the client.

Gypsum shaft walls (seen here from inside the cavity) are the thinnest and lightest-weight shaft walls available.

Gypsum Shaft Walls

Since their introduction nearly 40 years ago, gypsum drywall shaft systems have offered architects a highly attractive combination of performance and installation benefits. As such, they are considered the preferred choice for most applications. The systems are lightweight. A two-hour fire-rated gypsum wall weighs only 9 pounds per square foot. They are thin. A two-hour fire-rated wall is only $3^{1}/_{2}$ inches thick. They also install more quickly and economically than "wet" shaft walls, such as masonry. Gypsum panel shaft walls are completed early in the construction process and finished later, along with other interior partitions. Most importantly, the systems have undergone extensive independent testing for fire, sound and structural performance.

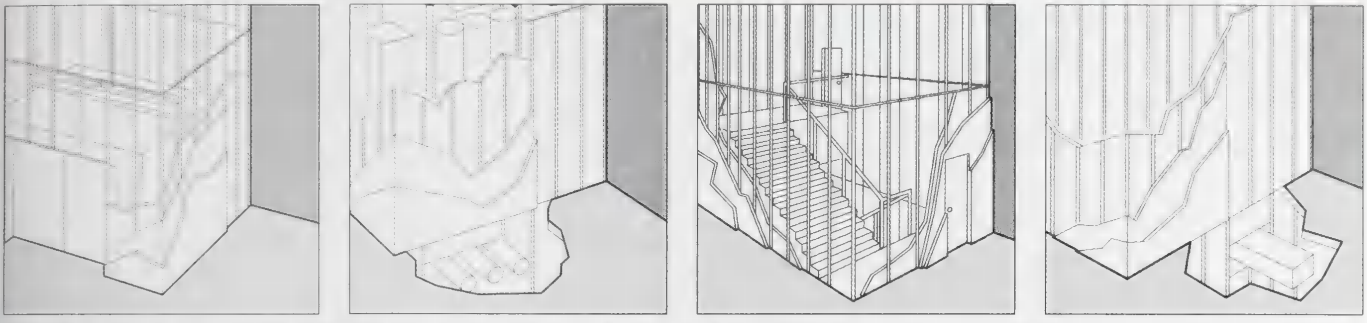
The most widely used gypsum shaft wall system consists of only five components. They are:

- Gypsum Liner Panels – 1-inch-thick and 24 inches wide, with double-beveled edges
- Gypsum Panels – $^{5}/_{8}$-inch-thick Type X or $^{1}/_{2}$-inch-thick Type C core
- Steel C-H Stud – $2^{1}/_{2}$, 4 and 6 inches deep, 25, 22 or 20 gauge
- Steel J-runners – $2^{1}/_{2}$, 4, and 6 inches deep, 24 or 20 gauge (J-runners may also be used as starter studs.)
- Steel E-stud – $2^{1}/_{2}$, 4 and 6 inches deep, 25, 22 or 20 gauge

Substitutions for any of these components are not advisable without a thorough evaluation by the architect. Substitution is typically outside the scope of independent system evaluation and therefore is not endorsed by system manufacturers.

Installation of the gypsum shaft system is handled as follows:

1. J-runners are attached to the concrete floor and to the structure above. Attachment is accomplished using a power-driven fastener of a known pull-out and shear capacity.
2. An E-stud is vertically attached along one side of the terminating wall or structural element. In cross-section, the E-stud, in fact, looks like an "E," and is designed to receive a 1-inch-thick, 2-foot-wide gypsum liner panel. (J-runners can be used as an alternative to E-studs.)
3. A gypsum liner panel is placed into the top and bottom of the J-runners and fitted into the E-stud. Because no fasteners or adhesives are required, the application moves quickly. (When using J-runners instead of E-studs, attachment screws are required.)
4. A C-H-stud is then placed over the free edge of the liner panel and the next panel is positioned within the J-runners and inserted into the "H" portion of the stud. The C-H-stud provides a tight friction fit along the entire length of the panel to eliminate rattles when in service. Again, no fasteners or adhesives are needed. Like the E-stud, the C-H-stud derives its name from its cross-section profile. The "C" section of the stud forms a cavity that can hold insulation, as well as plumbing and electrical lines. It has 1-inch-diameter holes located 16 inches from each end to accommodate horizontal conduit runs. The "H" portion of the stud features vertical slots to minimize heat transfer through the stud.



Cut-away views of various gypsum shaft wall systems: an elevator shaft, a mechanical shaft, a stairwell and an air return shaft.

5. The installation continues progressively. Each succeeding liner panel is fitted with a C-H-stud and the next liner panel is inserted until the full length of the wall is reached. The wall is completed by fitting the final gypsum liner panel into another E-stud or J-runner attached to the intersecting construction.
6. After the gypsum liner panels are installed, one or more layers of $^{5}/_{8}$- or $^{1}/_{2}$-inch-thick Type X or Type C core gypsum wallboard panels are screw-attached to the front of the "C" section of the studs. The face panels are finished using standard wallboard joint compound and tape, then primed and painted. For enhanced abuse resistance and a more monolithic look, Type X or Type C veneer plaster base panels finished with veneer plaster can be used in place of the gypsum wallboard.

Design Parameters

The first definitive design parameters for shaft wall systems were developed more than 30 years ago by the structural engineering firm of Skilling, Helle, Christiansen and Robertson, working in association with Minoru Yamasaki and Associates and Emory Roth & Sons. Their study was prompted by a reported shaft wall failure in a prominent New York City office building. (A similar shaft wall failure had also been reported in a Cleveland building.)

The study revealed that the walls in the New York office building had failed due to elevator cyclic loading. As elevators move through a building, they create a piston-type action that induces alternating positive and negative loads in the shaft walls.

Based on these finding, Skilling, Helle, Christiansen and Robertson established the following criteria:

1. The shaft wall system should be capable of being built from one side only.
2. The assembly must obtain a two-hour fire endurance rating.
3. The assembly should have a minimum STC (Sound Transmission Classification) of 40.
4. The maximum dead load of the partition should be 15 pounds per square foot.
5. The shaft wall must withstand a 7.5 psf loading while limiting deflection to L/240.
6. The shaft wall must withstand an instantaneous load of 25 psf without structural failure.
7. The assembly must be cycled through its maximum deflection without failure for 1 million cycles.
8. The assembly must be airtight.

Gypsum cavity shaft wall assemblies meet all of these design requirements. They have been designed and tested using accepted engineering practices with deflection criteria of L/120, L/240 and L/360 clear partition heights. Limiting height tables account for flexural and shear forces, and a wide range of product and installation combinations is available to meet performance requirements.

The walls have been tested (per ASTM E119) to achieve fire ratings of one to four hours. The UL design numbers for the most commonly specified fire-rated gypsum shaft wall systems are:

- One-hour system: UL Design Numbers U415 and U469
- Two-hour system: UL Design Numbers U 415, U438 and U467
- Two-hour system (alternate): UL Design Number U492
- Three-hour system: UL Design Number U415
- Four-hour system: UL Design Number U415

In terms of sound transmission performance, gypsum assemblies using $2^{1}/_{2}$-inch studs have been tested to achieve an STC of 39. The rating can be increased to 47 by adding a 1-inch-thick layer of sound attenuation fire blankets (SAFB) within the partition cavity, while an STC of 52 can be achieved by using 4-inch studs with 3 inches of SAFB.

When it comes to pressure loading, it is important to differentiate between intermittent and constant load tables when reviewing manufacturers' limiting heights tables. These tables evaluate the various combinations of gypsum panel thicknesses and layers with stud gauge and depth. Because the gypsum panels and steel studs behave compositely, the relative stiffness of the system is greater than the stud properties of the C-H-stud alone.

The intermittent load table is appropriate when designing an elevator shaft. If the shaft is to be used for HVAC and there is no sheet metal ductwork (e.g. the gypsum will serve as the duct liner) the constant load table should be used. This differentiation is important because AISI (the American Iron and Steel Institute) allows engineers to reduce the stress by one-third if the loading is considered intermittent. This reduction is not allowed for mechanical heating and cooling shaft walls where the pressure is constant.

It should also be noted that while codes require specifiers to assume a 5-pound per square foot uniform load for interior partitions, this may not be sufficient for elevator shaft walls, where loading is a function of the speed of the elevator and the number of elevators per shaft. (See *Recommended Elevator Shaft Pressure Load* table included in the additional online reading materials.)

These criteria are among the factors that define essential gypsum shaft wall performance. However, additional criteria such as life cycle costs and security considerations continue to shape how well the shaft walls function within the building as a whole. (See page 200 for more information about abuse resistance.)

Specification Guidelines

Following are a number of key issues that need to be considered when creating gypsum shaft wall specifications:

1. Design the system to meet anticipated elevator shaft pressures. Pressures will vary depending on the speed of the elevators and the number of elevators per shaft.
2. Maximum partition heights are determined by intermittent air pressure loads and allowable deflections. The applied pressure load is selected based on the elevator cab speed and the number of elevators per shaft. Specifiers should consider three factors to determine maximum partition heights:
   - **Bending Stress** – the unit force exerted that will break or distort the stud;
   - **End Reaction Shear** – determined by the amount of force applied to the stud that will bend or shear the J-runner or cripple the stud;
   - **Deflection** – determined by the amount of bending under a load that a wall can experience without exceeding a prescribed ratio related to partition height.
3. An important, but often neglected, design consideration is the interface of the elevator shaft wall and the B-labeled elevator doorframes. Be sure that

the cavity shaft wall system has been tested by UL with the elevator door and frames that will be installed in the building. Not all systems have been evaluated for this critical juncture, and there are some specific details that should be followed.

4. Bear in mind that not all shaft wall steel studs are the same. Airtight, rattle-free performance requires a C-H-stud, which provides continuous edge support along the full length of the 1-inch-thick liner panels. Some studs have tabs that provide only intermittent support and may bend or break during installation.
5. To provide the safest possible cavity shaft wall construction, carefully review the manufacturer's limiting height data.
6. Oscillating height testing is another key consideration. Manufacturer oscillation testing has demonstrated that J-runners at the top and bottom of the shaft wall should be at least 24 gauge to withstand the positive and negative pressures created by the elevators. Lesser-strength J-runners can fatigue and may be subject to fastener failure and fracturing. Look for specific test data up to at least 1 million cycles to ensure overall system longevity.
7. When designing mechanical shaft walls, give careful consideration to ductwork penetrations. If not designed properly, these penetrations may negate the wall's fire endurance rating. Typically, a fire damper in the ductwork itself is sufficient; however, make sure the damper is compatible with the type of wall specified and that both the wall and the damper have been evaluated under actual fire testing.
8. Typically, shaft wall installation closely follows the erection of the superstructure. This is done to provide a safety barrier around the shaft openings and speed the installation. Unfortunately this is sometimes done prior to completion of the exterior envelope. This exposes all building materials to moisture, which can lead to a variety of adverse conditions. To ensure proper performance, it is vitally important to control moisture on a project. (More information on moisture control is included in the required additional reading materials.)
9. Shaft walls with elevator door frames in them should be a minimum of 5 inches thick to accommodate the boxes for call buttons, position indicators and fireman's access keys.
10. Where shaft walls enclose elevator and unlined return air vents, and intermittent pressures are expected, sealant is recommended at intersections with floors, ceilings, columns, ducts, etc. to seal peripheries and penetrations to minimize whistling and dirt accumulation due to air movement.
11. If the gypsum shaft wall is intended to enclose a mechanical shaft and there will be no sheet metal ductwork, the system should be designed with the following performance provisions:
    - The gypsum board surface temperature should not exceed 125 degrees F.
    - Air stream dew point temperatures should be maintained below gypsum board surface temperatures.
    - The assembly should be designed to withstand sustained design uniform air pressure loads not exceeding 10 psf. Start-up surges should be no greater than $1^1/2$ times the design static load.
    - Separate approved liners should be installed in areas subject to continuous moisture overspray, condensation or air stream temperature exceeding 125 degrees F.
    - Appropriate sealants should be used to ensure airtight construction.

Conclusion

Because gypsum shaft walls enable designers to meet all key performance, design and installation criteria more effectively than competing systems, they are now considered the standard for low-, mid- and high-rise construction. Gypsum systems not only enabled the construction of ultra-high-rise buildings such as the Sears Tower in Chicago and the Petronis Towers in Kuala Lumpur, Malaysia, but they also provide a superior combination of benefits for low- and mid-rise construction.

No matter what the application, gypsum shaft walls are required to meet a complex range of performance and design functions. As such, architects must account for multiple variables in the specification process. With this in mind, designers are well advised to work with manufacturers that offer the most extensive testing data and technical support services. Doing so will minimize the risk for all parties involved and ensure long-term performance. ■

Designing for Gypsum Board Abuse Resistance

Within the last decade, gypsum board manufacturers have focused a great deal of research on understanding the nature of abuse that gypsum partitions may face during day-to-day service life.

This analysis has led to an understanding that there are three distinct components of abuse resistance. They are:

- **Surface Damage** – This encompasses abrasion or incidental indentation of the partition face from high traffic under normal use.
- **Penetration** – This is defined as penetration through the facing material into the stud cavity resulting from the impact of a blunt object (such as a kick or a hammer blow) or from a sharp object (such as a screwdriver or a knife). It also includes a blow from a softer object that covers a large surface area of the wall. When penetrated, systems without a stud cavity tend to undergo failure of the entire partition.
- **Security** – This is a breach of the entire assembly from either forced entry or ballistics.

To aid architects in determining which gypsum panel designs best meet these various abuse-resistance conditions, the following abuse categories have been developed:

- **Category One (*Light Duty*)** – A basic upgrade of standard drywall that provides improved resistance to incidental surface and impact damage.
- **Category Two (*Moderate Duty*)** – Ideal for areas such as multifamily stairwells and retail corridors that require an upgraded resistance to incidental surface and impact damage.
- **Category Three (*Heavy Duty*)** – Ideal for freight elevator walls and other areas that require resistance to heavy surface and impact damage.
- **Category Four (*Extreme Duty*)** – For even stronger protection against heavy surface and impact damage.
- **Category Five (*Security*)** – For protection against forced entry and ballistics.

For a typical office building, the shaft wall design may require a category one or two level of abuse resistance. Hospitals and other institutional facilities may require heavy to extreme abuse resistance (categories three or four). And where security is a consideration, category five abuse resistance may be required. One such building, the Broward County Judicial Center, in Broward County, Fla., was designed by Michael Schiff & Associates in the early 1990s with shaft walls made from high-strength solid plaster. As security in building design continues to grow in importance, wall security testing recently promulgated by the U.S. Department of State (ST-STD-01.01 and ST-STD-01.02) may be of particular interest.

One Cautionary Note:

When designing shaft walls for abuse resistance or for any other secondary consideration, life safety considerations should never be compromised. Independently verified system performance always comes first.

Click for Additional Required Reading

As part of this CES learning activity, you are required to read some additional material. Some of the test questions below will relate to the additional reading material. Go to www.architecturalrecord.com/CONTEDUC/ConteducC.asp to access the material online. To obtain a faxed copy, contact Marty Duffy at 312-606-5781 or mduffy@usg.com.

Learning Objectives

At the end of this article you will be able to:

- Understand the essential performance and design criteria used to select and specify cavity shaft walls;
- Know how gypsum drywall shaft walls perform and install;
- Create gypsum drywall shaft wall design specifications optimized for abuse resistance and moisture control.

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 252. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. The type of shaft wall selected and its location impacts the amount of usable space in a building.
A: a. True
b. False

Q: 2. In comparing shaft wall performances, which has the lowest cost index?
A: a. Masonry
b. Poured-in-place concrete
c. Solid plaster
d. Gypsum panel

Q: 3. In comparing shaft wall performances, which has the fastest speed of erection?
A: a. Masonry
b. Poured-in-place concrete
c. Solid plaster
d. Gypsum panel

Q: 4. Which of the following components are NOT part of a gypsum shaft wall system:
A: a. Steel C-H-stud
b. Steel L-angles
c. Steel J-runners
d. Steel E-stud

Q: 5. Other commonly available materials may be substituted for the components of a tested gypsum shaft wall system.
A: a. True
b. False

Q: 6. During the installation of a gypsum shaft wall, what is the next step after a gypsum liner panel is inserted?
A: a. J-runners attached to the concrete floor and to the structure above
b. An E-stud is vertically attached along one side of the terminating wall
c. A C-H-stud is slid over the free edge of the liner panel

Q: 7. Insulation, plumbing and electrical lines can fit inside:
A: a. J-runners
b. C-H-studs
c. E-studs
d. The cavity between the gypsum liner panels and face layers

Q: 8. According to the design parameters set by Skilling, Helle, Christiansen, and Robertson, shaft walls should be capable of being built from one side only, obtain a two-hour fire rating and:
A: a. The shaft must be waterproof
b. Be oscillation-tested for one million cycles
c. Maximum height of an individual panel is 4 feet

Q: 9. When it comes to pressure loading, it is important to differentiate between intermittent and constant load tables when reviewing manufacturers' limiting heights tables.
A: a. True
b. False

Q: 10. For pressure loading, if the shaft is to be used for HVAC and there is no sheet metal ductwork, which table should be used:
A: a. Intermittent
b. Constant

Q: 11. The recommended elevator shaft pressure load for a single shaft enclosing two elevators moving at 1,000 – 1,800 ft./min. is:
A: a. 5.0 psf
b. 7.5 psf
c. 10.0 psf
d. 15.0 psf

Q: 12. In order to withstand the positive and negative pressures created by elevators, J-runners at the top and bottom of the shaft wall should be at least:
A: a. 12 gauge
b. 30 gauge
c. 24 gauge
d. 48 gauge

Q: 13. Which abuse category would best meet the abuse-resistance conditions in a shaft wall design for a freight elevator?
A: a. Category One (Light Duty)
b. Category Two (Moderate Duty)
c. Category Three (Heavy Duty)
d. Category Five (Security)

About USG

USG Corporation is a *Fortune 500* company with subsidiaries that are market leaders in their key product groups: gypsum wallboard, joint compound and related gypsum products; cement board; gypsum fiber panels; ceiling tile and grid; and building products distribution. The company received the 2001 AIA/CES Award for Excellence for its commitment to providing quality continuing education programs.

United States Gypsum Company, a subsidiary of USG Corporation, manufactures the SHEETROCK® Brand Cavity Shaft Wall System, the most extensively tested and widely used gypsum shaft wall in the industry. The shaft walls provide fire resistance up to four hours and sound ratings up to 52 STC. They resist intermittent lateral loads up to 15 psf, and resist fatigue failure under cyclic lateral loading.

For technical advice relating to cavity shaft wall detailing and specifications, contact USG Corporation at P.O. Box 806278, Chicago, IL 60680-4124, call USG's Customer Service Department at 800-USG-4YOU or visit the company's Web site at www.usg.com.

USG
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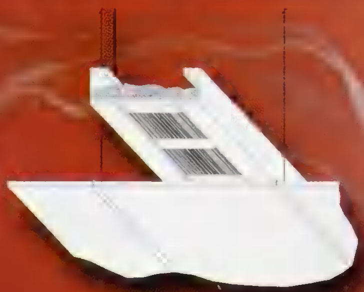
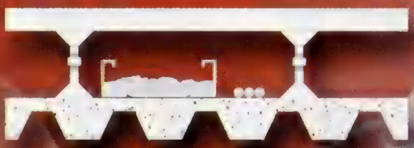
IN CASE OF FIRE...



IN THE CEILING PLENUM

Plenum rated Cable (CMP) can ignite in minutes and create large amounts of toxic smoke. The National Electrical Code now requires removal of abandoned communication cable in plenums.

Any fire can develop quickly into a cable tray fire.



UNDER AN ACCESS FLOOR

Fire beneath Access Floors can be extremely hazardous. Toxic smoke from burning plastics can accumulate, then pour through multiple panel joints.

One Breath of toxic smoke could be too much.

BELOW "POKE-THRU" OUTLETS

Fire rated poke-thrus are not tested for smoke penetration. Smoke in a ceiling plenum can penetrate most poke-thrus in seconds to endanger the upper floor occupants.

"Code Approved" does not mean safe!

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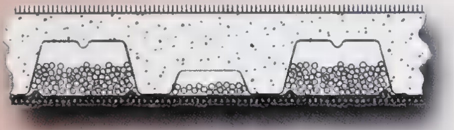

Building occupants deserve the safest working conditions possible. Why risk exposed cabling that can lose its fire retardancy with age, or poke-thru outlets that allow smoke penetration.

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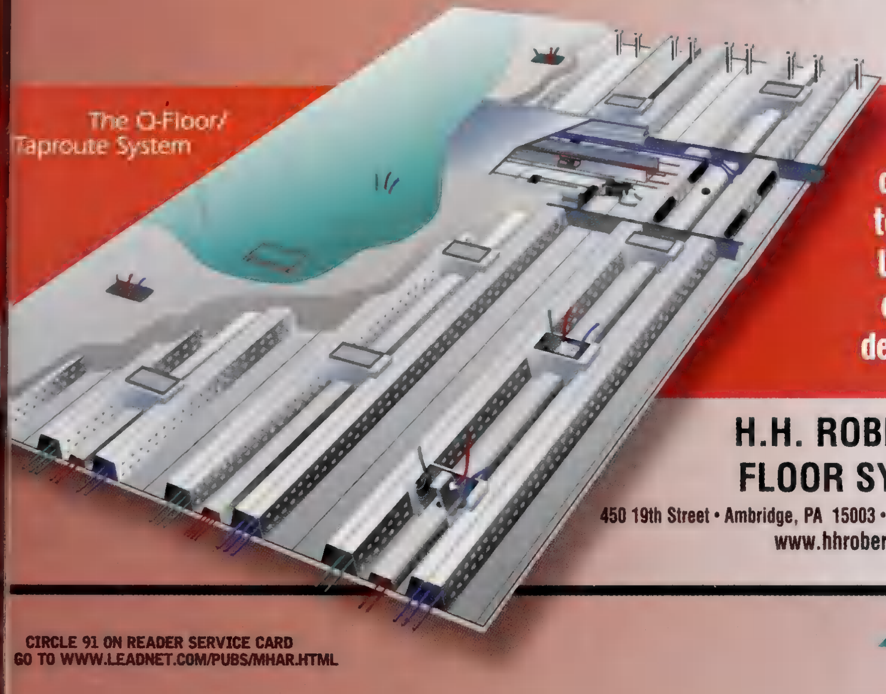

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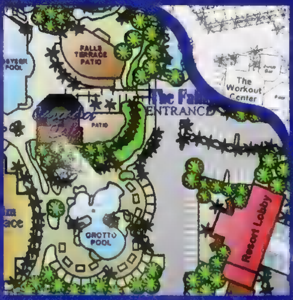

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Digital Practice

IN THIS SECTION: Intel leads an effort to standardize 3D on the Web; a new tool for specifying glass [page 205] • Audiovisual research at the University of Michigan takes place in a theater of light and sound [page 206] • Digital Architect examines the rising quality and falling prices of digital photography [page 213] • New tools for the architect [page 219]. *Deborah Snoonian, P.E.*

BYTES

NBBJ and AIA Seattle are hosting a conference on using digital models as collaborative design and construction tools. "Virtual Models/Actual Buildings" will take place October 10–11. Call 206/448-4938 for more information.

Harvard GSD's Center for Design Informatics is forming a consortium that will focus on integrating information technology concerns in the planning, construction, and operation of buildings.

The Hudson River Park Trust is using Constructware's collaboration tool to manage a $380 million redevelopment program, which will transform 5 miles of New York City waterfront property extending from Battery Park in Lower Manhattan to West 59th Street. About 50 companies are participating in the project.

Software makers Bentley Systems and Arc Second have signed an agreement to jointly develop mobile applications for AEC professionals.

BlueBolt Networks has moved the functions of BlueBolt Studio, its interior-design specifying software, to the company's Web site at www.bluebolt.com.

Las Vegas–based TRIRIGA, a provider of enterprise software for designing, building, and managing large capital assets, has added facilities-management capabilities by acquiring FacilityCenter from Peregrine Systems.

Nemetschek and office furniture maker Wilkhahn teamed up to produce InteracTable and InterWall, surfaces on which digital data are projected.

New coalition to hammer out standards for 3D Web graphics

At the Siggraph conference in July, leading chip maker Intel announced it was forming the CAD 3D Working Group to establish a standard format for accessing 3D content on the Web, to make such content more widely available and useful. "Removing the barriers to proliferation of 3D data is a critical next step in offering a richer experience for people on the Internet," said Patrick Gelsinger, Intel's vice president and chief technology officer, in making the announcement.

Long a hope of architects, engineers, and manufacturers, the adoption of open formats for 3D data has been stymied by companies intent on defending their proprietary file formats for 3D data.

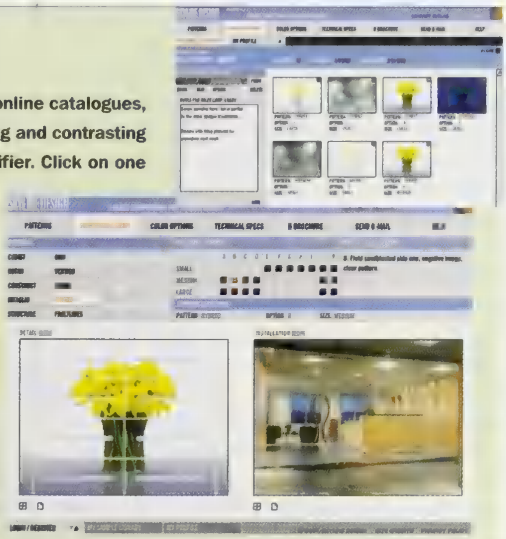
The new group expects to release a draft standard within 18 months. Members include a range of software makers and customers, including Adobe Systems, Microsoft, Boeing, Dassault Systems, Alias/Wavefront, and CADKEY. They are operating under the auspices of the Web 3D Consortium, a member organization promoting open standards that in 1997 released VRML, a 3D analog to the Web language HTML, used in gaming and engineering software. "The working group will decide whether VRML [or its XML-compliant next-generation version, X3D] or another format will be the standard. We don't require that of them," says Anders Jepsen, executive director.

Acronyms aside, the hope for many designers is that this effort will improve the portability of 3D models for building design and construction, no matter what software was used to create them. The top CAD vendors for architects are not members of the consortium (although Autodesk is said to be considering it), but they could choose to let users create or publish 3D content in the new format.

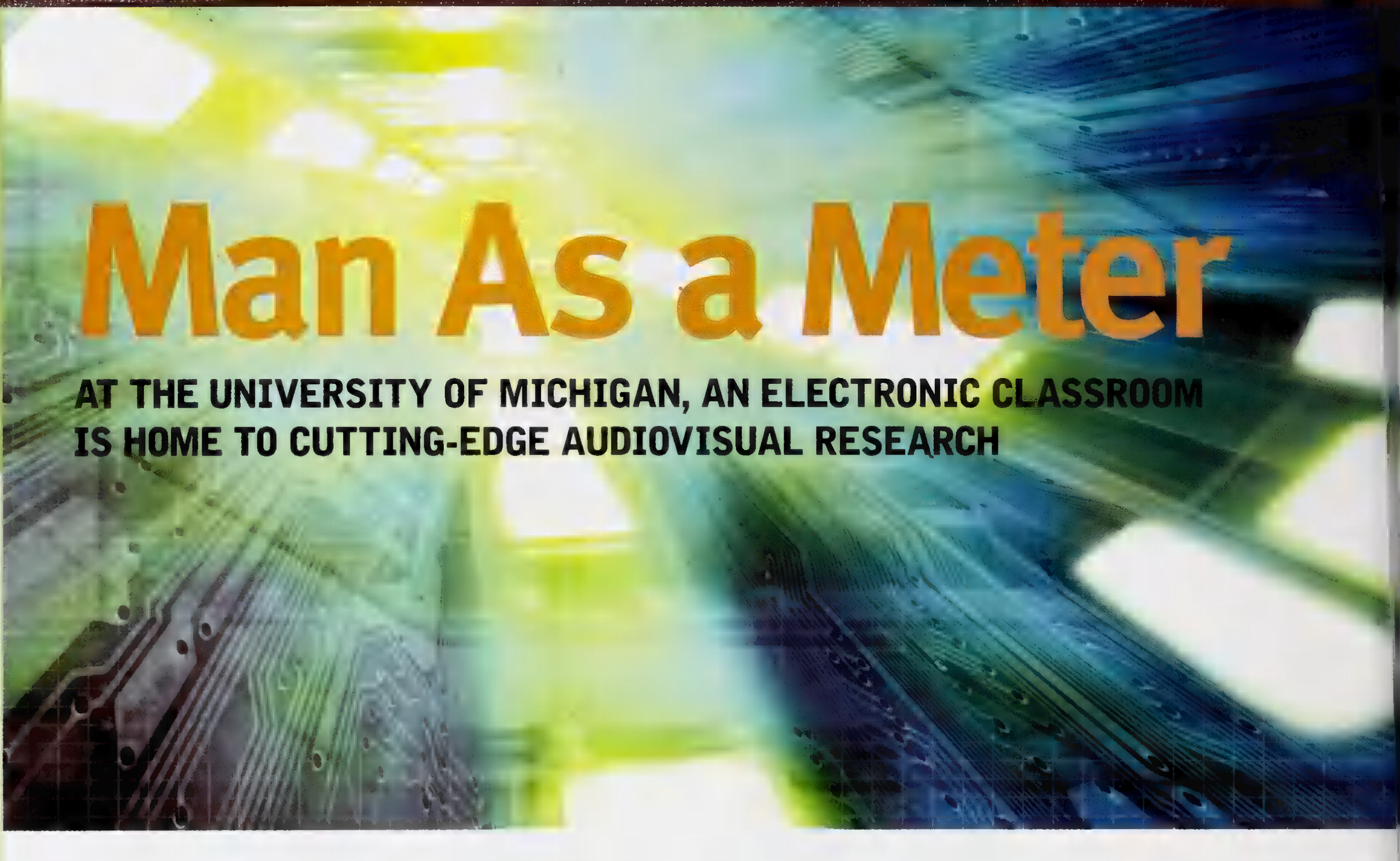
Rick Benoit of Intel, who is leading the CAD 3D Working Group, says it's yet to be determined how they will coordinate with organizations with similar or overlapping goals for making 3D data more accessible and interoperable, like the IAI's Industry Foundation Classes (IFCs) for building information. "We would be very interested in working with those from the architectural and design community on this effort," he says.

Deborah Snoonian, P.E.

CLICK ON THIS: g.skydesign.com



Most product manufacturers have Web sites, many have online catalogues, and a few have truly useful Web-based tools for comparing and contrasting product options, like the new G Glass Compendium Specifier. Click on one of the glass patterns shown on the main page, and your choice is then displayed on-screen in detail and installation. A table summarizes the various treatment, color, and scale options for the patterns you select. You can either roll your mouse over the table entries to get a pop-up text summary of your choices, or click on them to see more photographs and details. Digital sample libraries can be saved and e-mailed to colleagues or clients for review. Two drawbacks: The site doesn't have a "remember me" option when you register, so you have to log on manually whenever you visit, and there's no way to order samples online. But Skyline's phone number appears in the upper right corner of every page for sample ordering, a key piece of information that's usually buried too deep within a Web site. With its clean, intuitive interface and simple-to-follow instructions, the G Glass Compendium Specifier makes picking out glass as easy as a click of the mouse. From Skyline Design. 888/278-4660; g.skydesign.com. ***D.S.***



Man As a Meter

AT THE UNIVERSITY OF MICHIGAN, AN ELECTRONIC CLASSROOM IS HOME TO CUTTING-EDGE AUDIOVISUAL RESEARCH

By Deborah Snoonlan, P.E.

Playing video games, listening to music, going to concerts … sounds like college life, right? For the past few years, architecture students at the University of Michigan can get course credit for these pastimes. In 1998, the university's physical plant department spent nearly half a million dollars to outfit the main lecture hall at the Taubman College of Architecture and Urban Planning with state-of-the-art computing, sound, lighting, and projection systems, transforming it from a mere classroom into a working audiovisual (AV) laboratory. The technological overhaul was designed by architecture professor Mojtaba Navvab (known as Moji), who has spent his career immersed in the science of light and sound. As his students learn the basics of environmental technology and AV design, they also serve as subjects in a variety of experiments that attempt to link measurement to perception.

Collecting qualitative and quantitative data at the same time is crucial for improved sound and lighting design, Moji believes. AV studies typically entail a jumble of measurements and analyses, and codes and regulations dictate appropriate sound levels for different settings as well as minimum lighting levels for various tasks. But the numbers that measure acoustics and lighting—decibels, foot-candles, lamberts—are difficult to understand when they're devoid of context. "Sixty decibels may be a 'normal' sound volume, but what does that really mean? What does that sound like?" he says. "What people perceive in a given space matters more than the measurements themselves." The interdisciplinary nature of his research in the AV sciences has teamed him with colleagues from the computer sciences, physics, optometry, and psychology departments.

WWW For a full listing of credits for the design of the e-classroom, visit Digital Architect at **architecturalrecord.com**.

So, armed with digital-age tools and a captive subject pool of up to 150 students at a time, he simulates real-world lighting and sound conditions and forges connections between what instruments can measure and what the senses take in—connections that have aided design on the university campus and beyond.

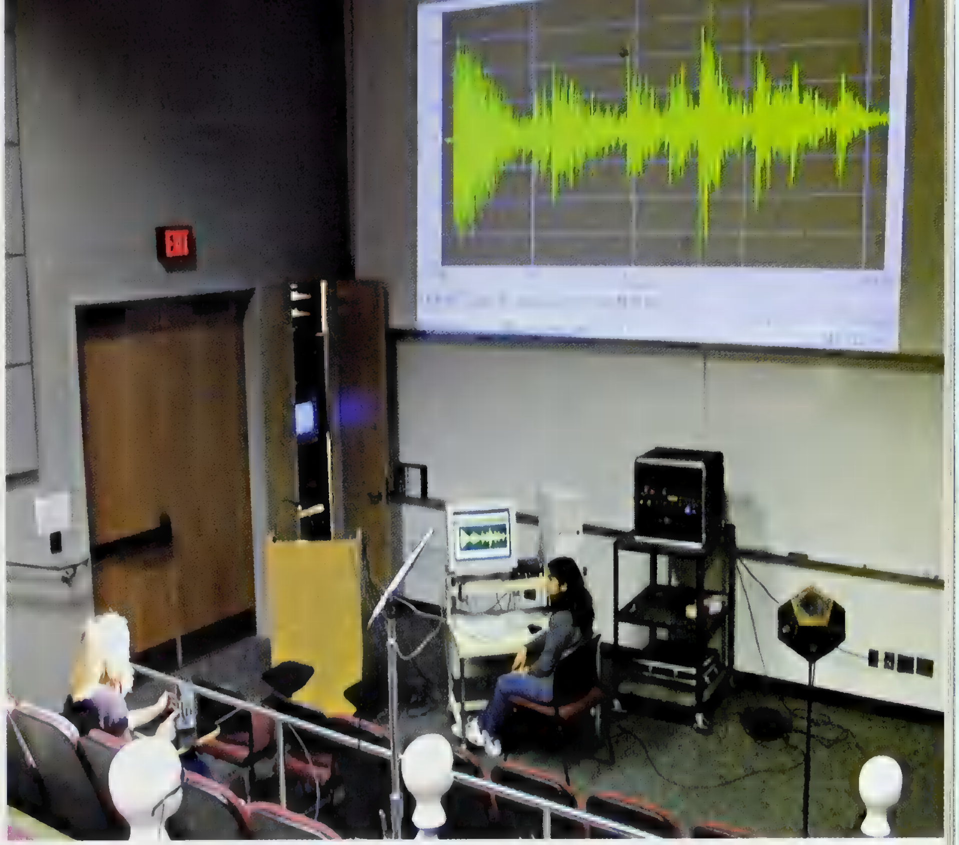
A theater for simulating interiors

At first blush, the amped-up classroom-laboratory looks no more sophisticated than an ordinary lecture hall, until Moji starts to point out its accoutrements. Lighting controls allow him to darken the windowless room to a blackness so complete that a hand held inches from the face is invisible, or brightened to the equivalent of a cloudless summer day.

IN THE CLASSROOM, LIGHT AND SOUND MEASUREMENTS CAN BE LINKED TO WHAT PEOPLE SEE AND HEAR.

Recessed wall washers at various intensities in the ceiling bathe the side walls in light, defining the perimeter of the auditorium and providing a method for demonstrating lighting designs. A large screen at the front of the classroom shows displays from a computer or an overhead spotlight mounted on the ceiling, which is programmable, can be aimed in any direction, and can provide any combination of light color and intensity needed for instruction and research. The audio system is composed of multiple speakers that can be adjusted for direction and tonal qualities. Sounds are recorded with in-class microphones, accelerometers, and geophones, and signals can be recorded, manipulated, and played back. The entire sound and light system is controlled from a podium by means of a custom touch screen, designed by Moji and a local AV consultant.

IMAGE AND PHOTOGRAPHY: © MOJTABA NAVVAB



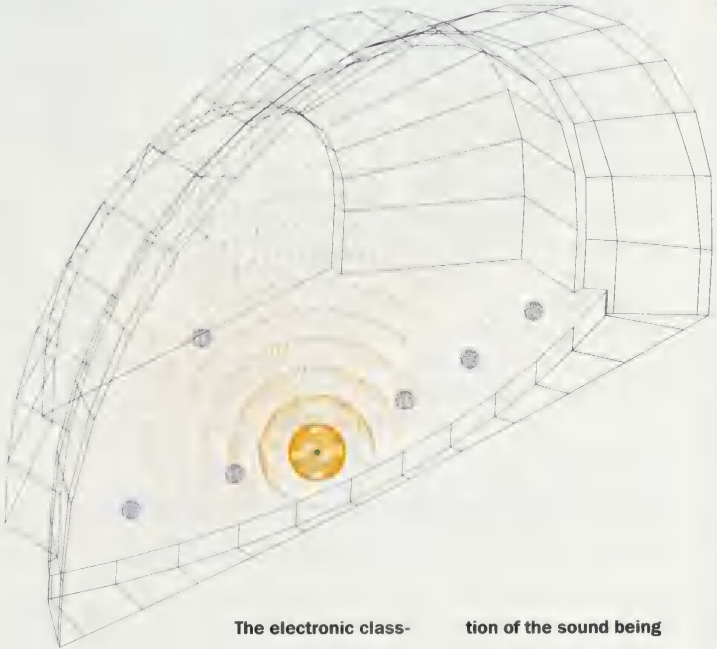
Besides being a convenient place to compile data from multiple subjects simultaneously, working in the classroom-laboratory has another advantage. "I have to teach color temperatures and other fundamentals, and it becomes deadly boring," Moji says. Using digital-age tools enlivens the subject matter for students and professor alike. He spends the first two weeks of his environmental technology class, a senior-level course, teaching the basics of how light and sound are measured. Thereafter, he weaves his experiments into the regular course work about once a week.

Knowing he'd need to collect information from the students during his experiments, Moji arranged to have Ethernet access available in the first row of 15 seats in the lecture hall. When students connect their laptops and type in responses to Moji's research questions, the data are entered automatically into a Web site maintained for the class. Starting this fall, the classroom will be fully wireless-ready, and Moji will encourage all his students to outfit their laptops for wireless Internet access. "That way they won't need to fill out paper questionnaires, and I won't have to reenter their data," he says.

To "calibrate" the room before running his experiments, Moji places mannequin heads fitted with programmable sensors at strategic locations around the lecture hall. The sensors collect quantitative data on light, sound, temperature, and humidity, which are then verified by computer models. The information later helps him compare what students report hearing and seeing with what was measured as they were being questioned; it's also used to validate lighting and acoustic algorithms that are built into software.

Sound matters

For acoustics, training the untrained ear is Moji's first order of business.

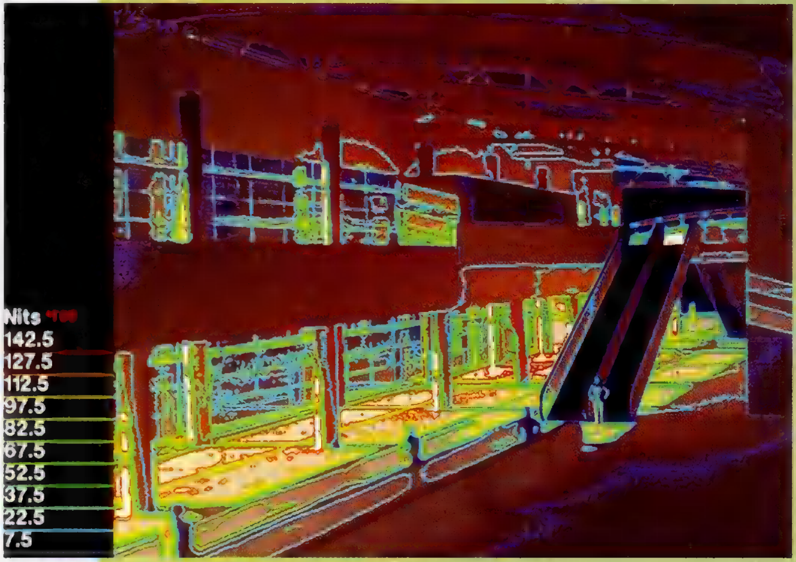


The electronic classroom at the University of Michigan (top right) is "calibrated" using mannequin heads fitted with sensors that measure light and sound levels in the room. On the screen, the spectral distribution of the sound being played is displayed. An acoustical model of the university's Hill Auditorium (above), where Moji conducts research with his students. The auditorium will soon receive a new audio system.

As students are seated in the lecture hall, he exposes them to noise, or more correctly, lots of noises: the clicks and whirs of mechanical systems, sound pollution like traffic and barking dogs, whistles, bursting balloons, gunshots. Some sounds (such as, thankfully, the gunshots) are played on a computer; others, like the balloons, are demonstrated live.

During the demonstrations, the spectral distribution of each different sound is plotted in real time by software called Acoustic2D and 3D (an industry standard for sound analysis), and the results displayed on the screen. "By explaining the graphs to the students, they can see the peak frequencies of each sound and get an idea of what a high-pitched or low-pitched or reverberant sound looks like, graphically," says Moji. He also uses reflective and nonreflective surfaces (like metal and wood) to demonstrate the principles of damping, isolation, and reverberation. When he plays music through the room's speakers, he tells his students to listen for changes in its source and direction, as he modifies the sound volume from front to back, right to left.

Once he's taught the class how to listen for these distinctions, the research projects begin. He asks the students to take a different seat than usual, and plays sounds and music clips, varying the pitch, frequency, direction, and amount of reverberance through the lecture hall's sound system. Without telling the students what aspects of the sounds he's varying, he asks them to provide qualitative information about what they hear (e.g., "Is this uncomfortably loud?" "Does this music sound warm or intimate?" "What direction is this sound coming from?"). Correlating their answers with the quantitative information previously collected by the sensors, and by microphones in the room that pick up the sounds as students answer the questions, allows Moji to do statistical analyses to evaluate the acoustic performance of the classroom in terms of its geometry. For this purpose, he has developed a special software model, in which the designs of more than 80 different auditoriums are programmed for analysis.



For SmithGroup's new Northwest Terminal at Detroit's International Airport (top), Moji simulated possible glare conditions for occupants. The computer' image (bottom) shows luminance coming through the glass.

Digital technology also lets Moji break free of the electronic-classroom setting for a different acoustics research project. Once a semester, he invites his students on an extra-credit trip to the university's Hill Auditorium, the Albert Kahn–designed concert hall where Leonard Bernstein, George Gershwin, and other renowned musicians have graced the stage. Each student carries one of the same programmable sensors used in the e-classroom. Again, he places the students in strategic locations around the 4,200-seat auditorium ("I tell them they can pick an area where they like to sit to listen to music," he says) and plays sound clips of music by Bach, Pavarotti, Elvis Presley, and others, including CDs the students bring in themselves ("They listen to a lot of electronic music nowadays," he notes). As the sounds are played, students record their subjective impressions of its loudness, echo, reverberance, and other characteristics. Moji collects their responses and pairs them with the data measured by each sensor. "We use this information to learn which types of sounds are most pleasing to people in a concert-hall setting," he says. Hill Auditorium is now undergoing a $38.6 million restoration, and Moji's research has helped shape a planned overhaul of its AV system, with Kierkegaard Acousticians consulting on the project.

STUDENTS USE LAPTOPS TO TYPE ANSWERS TO RESEARCH QUESTIONS DIRECTLY INTO A CLASS WEB SITE.

Shedding light on how clear the world appears

Teaching his students how to see and understand light involves a separate series of live demonstrations in the e-classroom. As a first step, Moji douses the auditorium lights and flashes an image of the Canadian flag onto the front screen, using the overhead spotlight fitted with a globo (template cutout). One catch, though: The flag is green and white instead of red and white. He tells the students to stare at the image for 10 seconds and then close their eyes. "They see the right flag color behind their eyelids," Moji says. "It's my way of teaching them how the retina works when exposed to certain bright colors, that we have cameras in our heads."

Much of the research Moji has conducted sheds light on the relationship between visual acuity (how sharply and clearly objects can be seen) and color temperature (how warm or cool the light is), and the e-classroom provides an ideal setting for such analysis, as he can test many subjects at one time and has a high degree of control over task and surrounding lighting conditions. The tests themselves are simple: He flashes

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Polshek Partnership's Biomedical Sciences Research Building will save energy due to ambitious daylighting strategies. Moji works with senior designers to ensure that glare from the transparent facade will not adversely affect passing drivers or occupants. The building is slated to open on the University of Michigan's campus in 2003.

word charts and Snellen eye charts (the type found in optometrist's offices) on the front screen and asks students to write down their seat location and what words or letters they can read. They continue to record this information as he changes the color of the spotlight shone on it, and also varies the intensity of the surrounding light. "Since they're sitting in rows, I know how far each student is from the screen," he adds, a crucial piece of information for interpreting the answers they provide.

What Moji calls his "big event" for lighting research is one of the more popular class days among his students. On the front screen he projects the 1980s video game Frogger, in which the goal is to guide an electronic frog across a busy highway without letting it get squashed by a passing car. The player must be able to see the frog very clearly at all times to succeed. "I show the game and let them watch the frog for a while," he says, "then I introduce a spotlight on the frog and tell the students to keep watching it." Similar to the eye and word chart tests, students record how clearly they see the frog as the spotlight and surrounding light's colors and intensities are changed.

By and large, Moji's studies have shown that for close work like reading, which involves a combination of task and surrounding lighting, visual acuity improves when surrounding lighting is of a high color temperature (which, counterintuitively, means light that's bluish rather than reddish). This result has significant implications for energy savings. "To achieve the same acuity using low-color-temperature surround lighting, you have to increase task lighting by almost 400 percent," Moji explains. "Instead, you only have to change the color of the surrounding lighting to get the same level of clarity, and you decrease the total amount of light needed in the process."

From the research lab to the real world

Far too often, research on university campuses languishes within the ivy-covered walls of the academy, but Moji has worked as an adviser on projects in Ann Arbor and beyond. His lighting research, for instance, has brought him together with Ford GM Chrysler in nearby Detroit, to study inspection lighting systems in automobile manufacturing. "Modern industrial auto plants with new machinery and assembly configurations will require specialized integrated lighting systems to ensure adequate illumination without reflected glare," he said in a paper describing his recommendations. He aims to help them identify the right task geometry and lighting combinations on factory floors so that workers are adequately protected from eyestrain and other occupational hazards.

Closer to home, Moji is also working with Polshek Partnership on the firm's 472,000-square-foot Biomedical Sciences Research Building, slated to open on Michigan's campus in 2003. The structure has an energy-efficient double-skin facade, the first of its kind Polshek has designed in the U.S. Moji is working with the project's senior designer to analyze the building's energy performance as well as its thermal and lighting comfort, making sure that occupants and vehicles passing by the transparent building are not exposed to too much glare. "Glare can be very disabling for drivers," he notes, something anyone who commutes home by car during a blazing sunset can affirm.

In the coming years, Moji would like to use the e-classroom to study different pairings of sound and light together, to ascertain how perceptions are affected by varying both parameters. "For instance, we could expose students to dim lights and loud music, then brighter light and loud music, then quieter music, and so forth," he says. Such studies could lead to improved AV design for interior spaces found in health-care facilities, sport and correctional facilities, factories, even submarines and space stations—places where the dynamics of the audiovisual environment have a significant impact on performance or the quality of the occupants' experience.

THE RESEARCH HAS FOUND APPLICATIONS IN MANY SETTINGS, INCLUDING LABORATORIES AND AUTOMOBILE PLANTS.

Moji's research has application in simulation as well. "One day architects and their clients will view simulated spaces inside caves," he says, meaning rooms equipped with virtual-reality displays that let people "occupy" a proposed design for a building and analyze its features, even make revisions on the spot with parametric 3D CAD software.

While it's clear that Michigan's e-classroom has bolstered Moji's research activities and made his classes more lively, there's a drawback to all this technological prowess. "My research has destroyed my enjoyment of music," he laments. "When I listen to a symphony, I don't really hear it anymore—all I can see are the frequencies dancing in my head." ■

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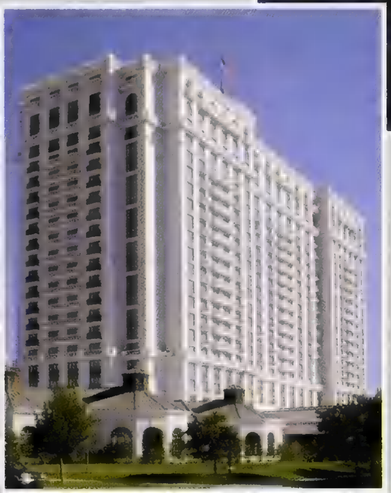
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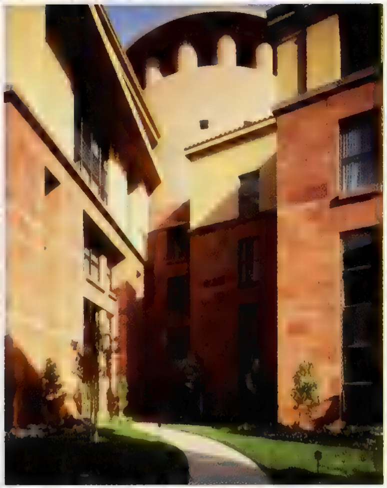
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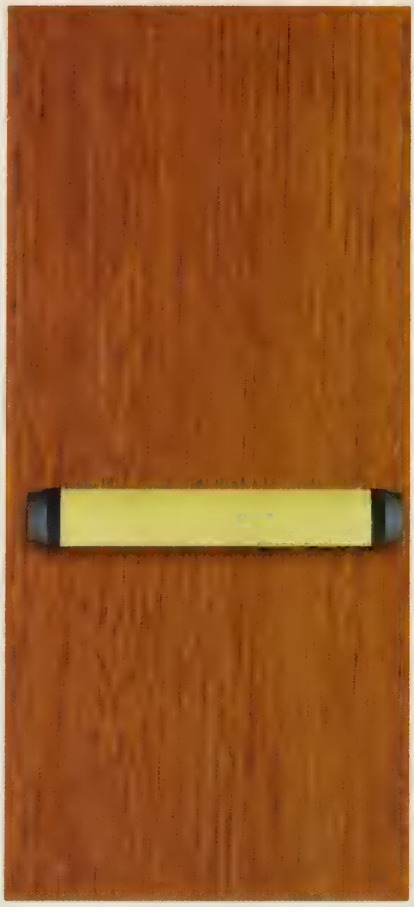

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Digital Architect

Focusing on digital cameras

By Michael Bordenaro

Patrick Mays of NBBJ (above) reviews poster-size prints taken with one of his firm's Nikon D100 digital cameras (top left). For lower-resolution photos, Mays has opted for Sony's Mavica digital cameras (bottom left).

Digital cameras, like many technology tools, come in such a dizzying array of options, with so many features and capabilities, that it's hard for architects to know which device is the best choice. Architects experienced with traditional single-lens reflex (SLR) film cameras who seek similar functionality and print quality in digital cameras have been hesitant to enter the digital realm because of the high cost of top-end equipment. Those seeking low-cost convenience have had better luck but have still lost ground on photo resolution, memory capacity, and battery life.

Fortunately, 2002 has been a good year for both camps. Due to improvements in charged-couple devices that act as the "film" for digital cameras, small, inexpensive cameras have improved in quality, and professional-grade SLR-style digital models have dropped in price. The cost of storage media for pictures has also fallen, making digital cameras an affordable investment for firms large and small.

Framing the decision

The main consideration when choosing a digital camera is knowing how the photos will be used. Will they be posted to Web sites? Shown as presentation photographs? Published in printed material, like magazines or marketing brochures? E-mailed for review purposes? Saved for construction documentation? Working backward from the answers to these questions will help architects evaluate the plethora of models available.

The primary yardstick of a camera's quality (and price) is its optical resolution, measured in megapixels. The higher the megapixel rating, the better the resolution of the resulting photos and the larger the prints that can be made. Photos used in electronic media like Web sites, e-mails, and PowerPoint presentations can be handled easily by cameras in the 1- to 2-megapixel range, which cost about $300 to $500 currently. Cameras with a 2-megapixel resolution are capable of taking pictures that print clearly at a size up to 5 inches by 7 inches. Large-scale images for presentation or print publication, however, require a higher-resolution camera so they will reproduce clearly and accurately. Cameras with a 3-megapixel rating or higher should be used for this purpose, like the 6-megapixel models introduced this year by Canon and Nikon, which cost about $2,000.

Lens type is another important feature that drives camera prices. To preserve image quality when shooting close-ups, a camera should have an optical zoom lens, not just digital zoom. Lenses for film cameras are sometimes compatible with digital cameras, but more often than not special lenses will be needed.

Virtually all cameras save pictures on removable memory cards or disks that are available in various capacities (e.g., CompactFlash, SmartMedia, even old-fashioned 3½-inch floppy disks). Most experts say a 64-megabyte card is sufficient for the casual photographer shooting a mix of low- and high-resolution photos. Pictures taken at the highest resolution setting on a camera use more memory than low-res photos, so on extended shoots for print-quality photographs, high-capacity and/or multiple storage cards may be needed.

Many digital cameras are also capable of recording short video clips, with or without sound. Though the videos are not of the same quality as those taken with a video camera, this feature can be handy for documenting things like site conditions or construction processes.

An abundance of options

Architects are now using digital photography for everything from construction documentation to presentation-quality images. Brian Gassel, in-house photographer for Thompson, Ventulett, Stainback & Associates, in Atlanta—the 2002 AIA Firm of the Year—plans to buy a

Michael Bordenaro is based in Chicago and writes frequently about architecture and technology. He can be reached at mike@bordenaro.net.

WWW For more resources about digital cameras, and links to helpful Web sites, visit Digital Architect at **architecturalrecord.com**.

digital camera to shoot projects. "While I still use a 4x5 format camera for 95 percent of my shoots, my next step is to buy the new Nikon," Gassel said. He is opting for their 6.1-megapixel D100 digital SLR model, which allows the use of more than 40 existing AF Nikkor lenses and compatible flashes. "Except for high-end digital cameras that go for $5,000 to $6,000, most digital cameras don't allow you to interchange lenses," says Gassel, who plans to use his current perspective-correction lens and his stable of other lenses with the new Nikon, which is available for under $2,000. Another high-resolution camera introduced this year, the 6.3-megapixel Canon EOS D60 digital camera, also accommodates existing lenses—in this case, all EF-series Canon or compatible lenses. It can be found for less than $2,200.

Patrick Mays, chief information officer for Seattle-based NBBJ Architects, purchased three Nikon D100s for high-end image making. For general firm use for lower-resolution photographic needs, Mays has standardized on Sony's Mavica MVC-CD400 digital still camera, which has a 3X optical zoom lens and records images on specially sized CD-R and CD-RW media that are compatible with most PCs. For Mays, the type of memory the camera uses is critical. "For our shared cameras, we wanted to have storage media that were inexpensive, easy to use, and something people could own," he said. This year, when Sony upgraded from a camera that stored pictures on 3½-inch floppy disks to the model that uses CDs, Mays found what he wanted. "Employees have their own storage CDs," he says. "They don't fill the network [servers] with large images. They keep their CDs at their desks, and when they finish using the camera, they hand it in but keep their CD." He discourages using cameras with a proprietary storage medium, such as Sony's Memory Stick, because future technological innovations or business decisions by the owning company may render them extinct faster than nonproprietary memory media like CompactFlash and CD-Rs, which are a better choice, he believes.

THE PRICES FOR EVER-SHRINKING DIGITAL CAMERAS ARE FALLING AS THEIR PICTURE QUALITY IMPROVES.

This construction photo of the Niagara Gorge Observation Tower and Public Access Point, by Hardy Holzman Pfeiffer Associates, was taken with a Pentax Optio (left).

PHOTOGRAPHY: © HUGH HARDY

As Mays researched cameras for the firm's use, he also sent a memo to his staff advising them on purchasing cameras of their own. He noted that Kodak's EasyShare 3-megapixel camera with CompactFlash storage, priced under $300, was easy to use but has no optical zoom or other extras. His other top recommendations, all of which cost less than $600, include Nikon's Coolpix 885 (3 megapixels, CompactFlash storage), Fujifilm's Finepix 6900 (3 megapixels, SmartMedia storage), and the Olympus C-4040 (4 megapixels, SmartMedia storage).

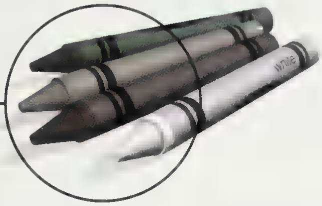
Size matters

Smaller firms have also taken advantage of falling prices for digital cameras. Jennifer Siegal, principal of Santa Monica–based firm Office of Mobile Design (which currently has three employees), bought a pocket-size 2.1-megapixel Canon Powershot S300 Digital Elph for about $500 to document design and construction in still images and short video clips up to 20 seconds long. Siegal, who is an associate professor at Woodbury University in Burbank, California, has shown images and videos in presentations to her students, clients, and the general public. The response to the video component of her presentations has been especially positive, she says.

Siegal's senior design associate, Kelly Bair, has been largely responsible for using the camera and notes many of its positive features. "We're building a residence in downtown Los Angeles, and [the Elph] is a wonderful camera to document the construction process," Bair says. Using a 128-megabyte CompactFlash memory card, which costs approximately $80, Bair was able to shoot several stills and brief videos at the construction site without running out of memory. "I'm able to take a series of pictures and stitch them together to make a panoramic image, using the software that came with the camera. The video images are pretty good and read very clearly on our computer monitors," she says, adding that image download is faster with the Elph compared to other digital cameras she's used, and its camera interface is highly intuitive. On the downside, she's disappointed by the Elph's battery life, but she has purchased additional batteries for under $50.

The Elph is one of a growing breed of smaller, compact digital cameras that, like many technologies, have been shrinking since they came on the market. A compact size was a key decision element when the principals of Hardy Holzman Pfeiffer Associates decided to purchase their own digital cameras. While the firm has gone fully digital with all in-house photography and has equipped its New York office with three Kodak 3.1-megapixel DX3900 zoom digital cameras, the principals wanted cameras for their own personal use. Hugh Hardy, FAIA, and Norman Pfeiffer, FAIA, each chose the com-

Theirs.



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pact Pentax Optio 4-megapixel 430 camera with 3X optical zoom, while Malcolm Holzman, FAIA, opted for Canon's Powershot Digital Elph. "Taking pictures on film got to be a burden and a bore. Digital imagery revived my interest in making images, because they can be used in so many ways," says Hardy, adding that his Pentax is so small and easy to carry it has become a constant companion. "The raw material of design is seeing what's around you. Being able to record what you see in an easy manner greatly assists the [creative] process."

One machine to another

Transferring photos from a camera to a computer is an often overlooked feature when making purchasing decisions. Digital cameras, like other peripherals, come with cables for this purpose. Buyers should make sure the cable is compatible with the port on their computers (virtually all computers made within the past two years have USB ports for peripheral connections, which provide faster data transfer than the older serial-port connections). Alternatively, card readers can be purchased that allow download of images directly from storage media.

One widely lauded advantage of digital cameras is the ability to preview photographs instantly and delete those that turn out poorly. "By reusing a memory chip over and over, additional pictures are not as expensive. Throwing away images is less painful," says George Papageorge, FAIA, principal of the Chicago-based firm Papageorge Haymes, who also notes, "There are no film costs or film-developing costs, and the time to get [photo] processing completed is reduced."

For digital images, electronic manipulation takes the place of film development. Adobe's Photoshop is an industry standard for this purpose, but many cameras are packaged with software with similar (though pared-down) functions for adjusting light levels, perspective, color, and other features. Papageorge encourages newcomers to learn how to use Photoshop or other image-editing software, since they replace the development techniques that allow photographers to control how the finished product looks. "The software requires training, but the beauty is, it's not a chemical process. There are no toxicity problems and no light exposure problems," he adds.

Finally, what to do with those hundreds of photos that were so easy to snap? Digital images are memory-hungry, and it's critical to keep them from becoming a confusing mess of meaningless file names that clog a firm's server or hard drives. Many companies offer free or fee-based Web hosting of digital photos, but for firms with large stocks of digital images that will be used again and again in various media, image-management software is designed to help users name, retrieve, and organize all types of digital media [RECORD, March 2001, pages 164–70]. Investing a few hundred dollars in image-management software can save a great deal of effort down the road when organizing a digital-image library.

An intern at the Office of Mobile Design builds a model for the Portable House project. This picture was taken with a Canon Powershot S300. Canon's Powershots (left) fit inside a shirt pocket.

Will pixels trump film?

The ease, immediacy, and convenience of digital photography is seductive for neophytes of the medium, but experienced architects know that the mere ability to take photos rapidly does not make a good photographer, nor will it automatically produce the best-quality photographs. Papageorge, who's taken presentation photographs of more than 50 of his firm's projects since 1979, uses a film camera as well as a 3.34-megapixel Olympus C-3030 zoom digital camera, which he bought in 1999. "Digital photography does not replace the photography intellect, or eliminate the need for understanding the nature of photography in general," he cautions. "It's important to learn what fine photography is about. Take time to understand exposure compensations [for film], because there are still film-oriented settings in the image-capture portion of the digital process."

While digital photography has a clear and growing role in architectural practice, it will never completely replace the film camera, especially for photographing completed projects. As Papageorge says, "The 4x5 camera is an architect's best friend. It takes a lot of talent to get the best possible image out of it. It takes a pro. But with a digital camera, I can get close to 4x5 quality … just not all the time." ■

ADDITIONAL RESOURCES

www.steves-digicams.com
Independently-maintained consumer-oriented site for digital camera information, news, and reviews of cameras and accessories.

www.imaging-resource.com
Another site for digital camera information, with a detailed homepage that shows daily news headlines and links to discussion boards.

www.calumetphoto.com
A site maintained by Calumet Photographic, a supplier of high-quality imaging products. The company offers digital products, supplies, and services, including training and consulting.

www.ritzcamera.com
Online store for purchasing digital cameras and other imaging products, including video cameras, printers, lenses, and accessories.

www.kodak.com
Search for "Digital Learning Center" on this manufacturer's Web site for a collection of information, tips, and techniques on digital imaging and photography.

www.pcmag.com
The Web site for *PC Magazine* regularly features reviews of new digital cameras and image-editing software.

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Digital Products

New tools for the tech-wise architect

By Deborah Snoonian, P.E.

You, the readers, have spoken. You told us you wanted to see new digital products here, not just software reviews. These pages have a sampling of noteworthy items that have crossed our desks and computers in the past few months. Look for more of the same in the future.

ArchiCAD 8
Graphisoft US
Newton, Mass.
617/485-4203
www.graphisoft.com

The latest version of Graphisoft's CAD software emphasizes streamlined navigation and document management, faster application speed, and new 2D drafting tools. The Project Navigator simplifies document access and lets users manage documents with fewer mouse clicks. It can be used to create and arrange submission plans, tenders, or construction documents; to integrate layer combinations and scale and display options; and to distribute documents to a local network, printer, or FTP server. The Layout Book feature organizes a project's documents into one file and offers automatic page numbering, multiple master pages, and intelligent title block elements. In the 2D realm, ArchiCAD 8 has a new intuitive data-entry feature and detail tools; for 3D design, solid geometry operations let architects create complex elements in fewer steps. A customizable menu structure rounds out the package. Supports IFC 2.x. Requires: Windows 2000 or XP/Mac OS 9.1 or higher; Intel Pentium, Celeron, or compatibles/PowerPC or PowerMac G3 or G4; 128MB RAM; 500MB hard-drive space.

TrueSpace6
Caligari Corporation
Mountain View, Cal.
650/390-9600
www.caligari.com

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InkLink Handwriting System
Seiko Instruments USA
Torrance, Calif.
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www.seiko.com

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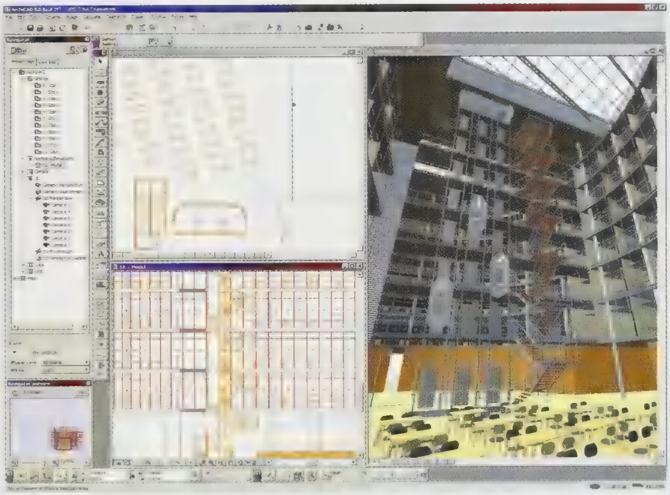
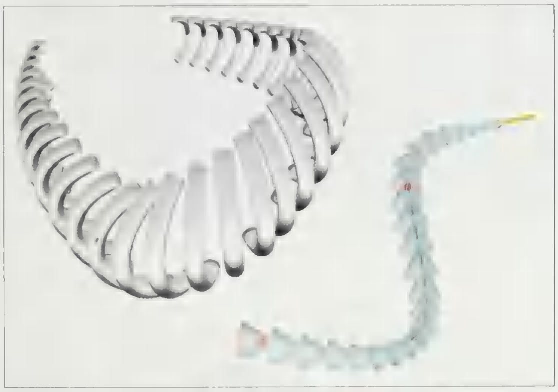
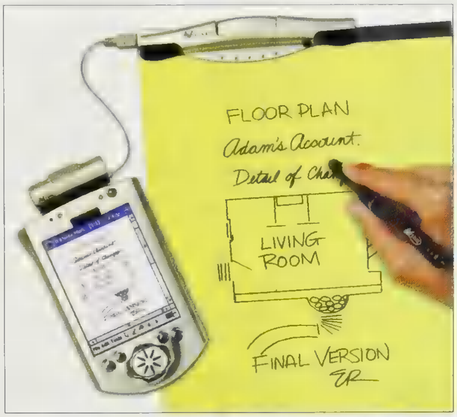


Graphisoft's Archicad 8.



Caligari's Truespace 6.



Seiko's InkLink.

PHOTOGRAPHY: © GRAPHISOFT US (TOP); CALIGARI (MIDDLE); SEIKO (BOTTOM)

Digital Products

light, and zoom in on your work. Requires: Windows-based PC or handheld organizers with an infrared port running the Palm, Windows CE, or Pocket PC OS.

TekCAD
TekStar Corporation
Longwood, Fla.
407/865-6996
tekstaronline.com

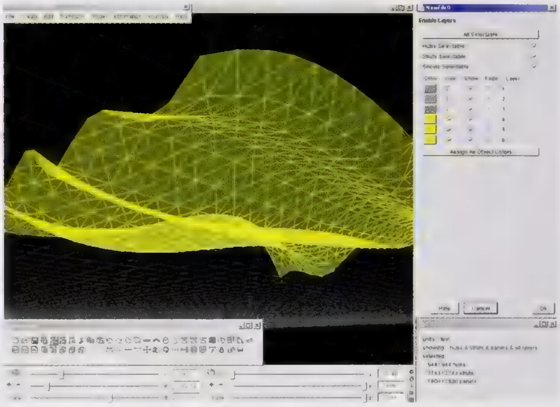
TekCAD, a program for creating and manipulating geometric forms (not solids), was designed with a simpler user interface in mind than 3D software tools intended for automotive, aerospace, or other mechanical design. Objects are created in TekCAD through generation of primitive forms like spheres, cubes, or cones, or from a composition of forms made previously. They're modified directly using freehand editing tools, or by plugging in numbers or formulas to change shapes, sizes, and positions with accuracy and precision. TekCAD supports simple mathematical operations as well as conversion, algebraic, trigonometric, and hyperbolic functions for precise exploration of alternatives. Objects can be seen and selected in any view, including perspective, plan, elevation, and isometric and oblique views. Once finished, 3D forms are exportable to DXF, VRML, and other formats for further development in CAD or rendering programs. The company claims that anybody with CAD experience can learn to use TekCAD within two to three days. Requires: Windows 95/Mac OS-X or higher; 128MB RAM; 50MB hard-drive space.

CAD2PDF
Layton Graphics
Marietta, Ga.
770/973-4312
www.layton-graphics.com

Firms with large stocks of native AutoCAD or MicroStation drawings can use this new server-based software to batch-convert files into text-searchable PDF format for viewing with Adobe's popular, pervasive Acrobat software. Pages can be submitted at any plot size and scale; line weights and vector resolution are preserved; and automated hyperlinking and bookmarking is possible for large drawing sets. The software can access custom font libraries and other CAD libraries to maintain conformance with in-house formats. Can be installed at a single-site or enterprise level. Contact Layton Graphics for system requirements.

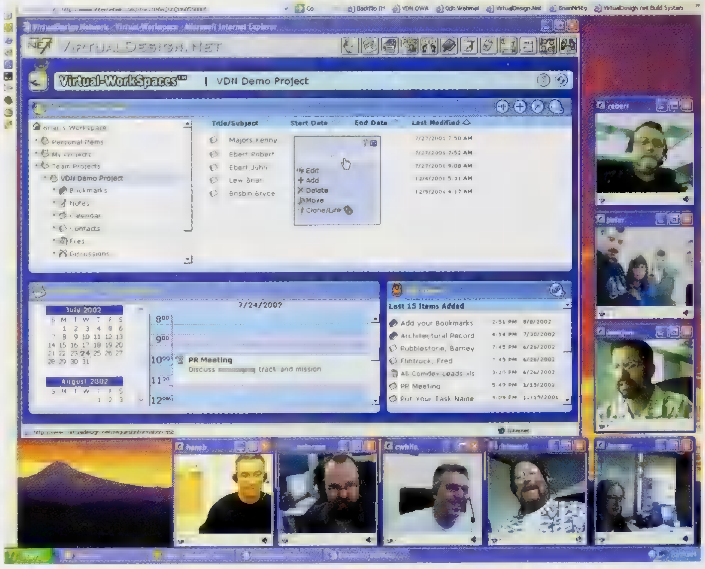
VirtualDesign Network
VirtualDesign.net
Portland, Ore.
800/552-4221
www.virtualdesign.net

New online collaboration companies haven't sprouted as quickly as they did in the late 1990s, but this newcomer from the Northwest aims to help the AEC community get in touch with their far-flung clients and partners. Its Virtual-WorkSpaces collaboration tool set includes a calendar, list of contacts, a filing system for documents, a conference section for prescheduled and on-the-fly meetings, discussion areas, viewers for 2D and 3D documents, and an area called "Community" that will be used for RFPs, software updates, and other services that don't fall into the other categories. At a demonstration at AEC Systems in June 2002, the software allowed a good-quality video conference between California and Oregon. Requires: Windows 2000 or XP or higher; Pentium III or higher; 256MB RAM; USB-based camera; Internet Explorer 5.0/Netscape 4.5 or higher. ■



Tekstar Online's TekCAD.

Layton Graphics' CAD2PDF.



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VirtualDesign.net's online collaboration site.

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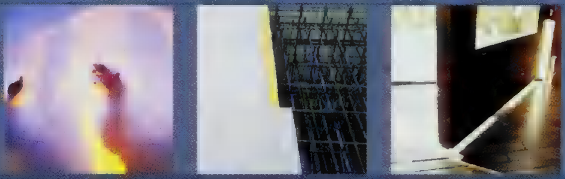

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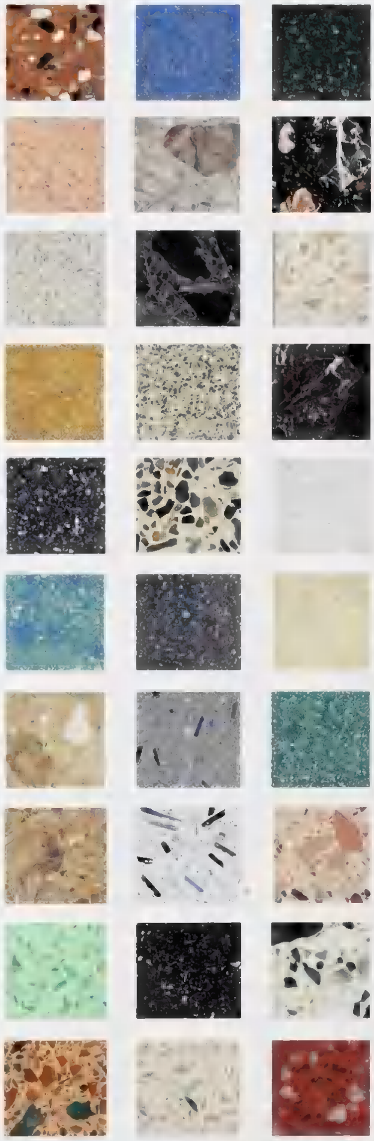

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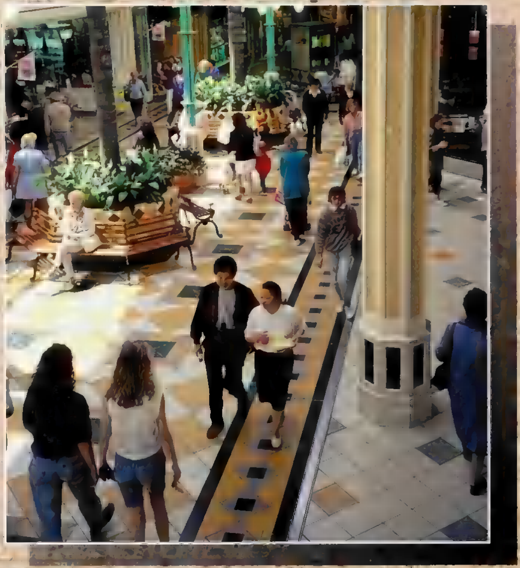

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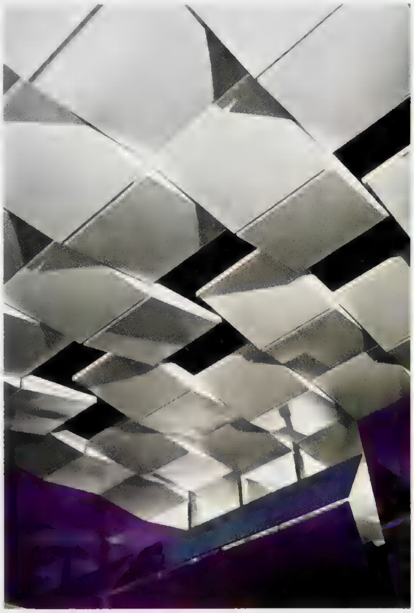
New Products

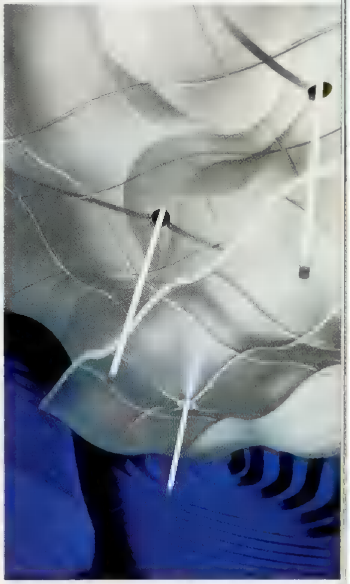
Out of all the product categories, **interior finish** manufacturers introduce the largest number of new products each year, from acoustical ceilings to tile to every type of wall covering. This year the trend toward **metallic effects** in the category continues and can be found in a diverse selection of products, including hard surface textiles, panel fabrics, cork flooring tiles, and commercial wall coverings. *Rita F. Catinella*

Two new systems help create dramatic ceiling landscapes

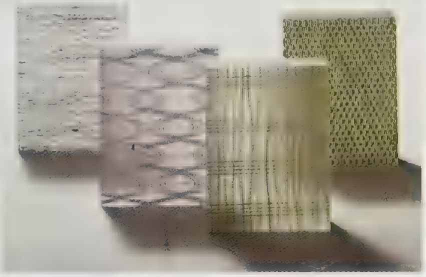
Geometrix lightweight aluminum panels, a new introduction from USG, are offered in a variety of profiles and depths to create 3D ceiling treatments featuring articulated planes, juxtaposed angles, and other geometric perspectives. The 2' x 2' panels install into 9⁄16" narrow profile and 15⁄16" standard suspension systems. The panels are available in four profiles: flat, wedge-shaped, and wedge-shaped with either inside or outside corners. The panel profiles can be combined to create 3D patterns or installed randomly to add dimensional variety to existing ceilings.

USG has also introduced the TOPO 3-Dimensional System, which consists of preformed translucent and opaque LEXAN infill panels installed into a curved suspension system. The infill panels are designed in four-panel modules to create the appearance of gently rolling curves. The system can be enhanced through independently supported lighting, which can be used to highlight the panel's soft, translucent colors. Lighting and utilities are integrated into the system through optional 4"-diameter utility circles, which are positioned either at the high or low points of the suspension system intersections or centered on individual panels. The newly upgraded USG Design Wizard, an interactive software tool, now features Geometrix and TOPO system ceiling design capabilities. 800/USG-4YOU. USG, Chicago, Ill. **CIRCLE 200**





Geometrix metal ceiling panels (left) and the TOPO 3D system (above).

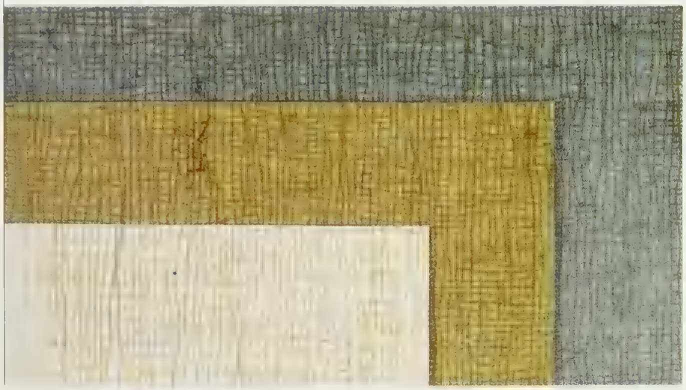


Newest addition to the resin/textile category

Lumicor, a new surface material developed and manufactured by Schober and the Designtex Group, is the newest addition to the recently created resin/textile category. The material's clarity and translucency is the result of a patent-pending production process pioneered by Schober, a company with a 20-year history in aerospace composite materials. Lumicor is a high-performance resin available in a range of thicknesses and decorative patterns; embedded elements may include fabric, metal, paper, and organic materials. Lumicor can be used to fabricate and form a variety of vertical, horizontal, and 3D surfaces and products, including furniture, partition walls, countertops, cabinet doors, store fixtures, light-diffusion panels, and shelving. The panels are available in thicknesses of ⅛" to 1" and are up to 98 percent efficient at blocking UV rays. They are available in 4' x 8' sheets but can be custom ordered in sheets as large as 5' x 10'. Schober is developing a method to reuse retired Lumicor materials. 212/886-8140. Designtex, New York City. **CIRCLE 201**

From rubber stamps to antique textiles

Peter Fasano finds inspiration for his printed fabrics and wall coverings from sources as varied as a rubber stamp borrowed from his son to a fabric at London's Victoria and Albert Museum. The latter inspired Fasano's Egerton Gardens Collection, which includes four designs offered in a palette of nine colors, printed on raw silk or a cotton/linen ground cloth, as well as four complementary designs printed on paper. The centerpiece of the line was based on a photo of the border of a damask weave in the museum. Shown below is another offering from Fasano, the Gridlock collection of hand-printed wall coverings. 413/528-6872. Peter Fasano, Great Barrington, Mass. **CIRCLE 202**



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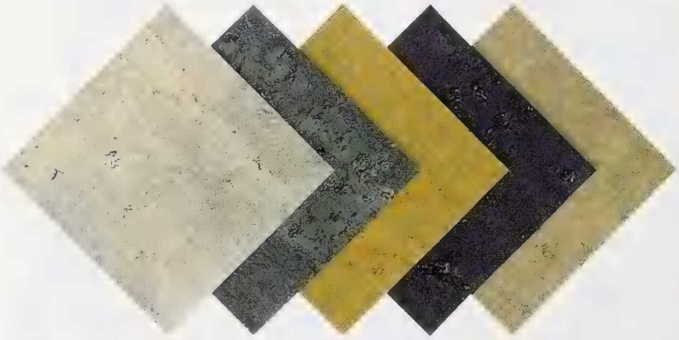
New Products

▲ Wide-board flooring

Junckers Hardwood has added Ash Wide Board to their product line. The Ash board features a strong grain pattern in a 5" width. The wide-board flooring is supplied in lengths of 6' to 10', with a thickness of $\frac{3}{4}$". The boards are cut for a tongue-and-groove fit. The company's complete line of hardwood flooring can be installed with a "floating" clip system or by using the traditional nail-down method. 800/878-9663. Junckers Hardwood, Anaheim, Calif. **CIRCLE 203**

► Elemental panels

Elements ceiling panels are a new way to fill 2' x 2' openings in suspended grid ceilings and are ideal for food service, health care, schools, laboratories, clean rooms, transportation, and retail. The thermoset-composite rigid construction contains polyester aluminum trihydroxide, copolymers, and fiberglass. The mold- and mildew-resistant panels lay into a $\frac{15}{16}$" or $\frac{9}{16}$" grid. 800/822-3411. Ceilings Plus, Los Angeles. **CIRCLE 205**

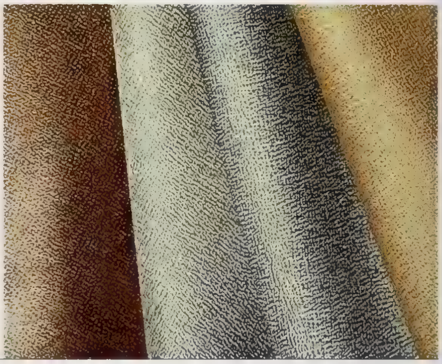


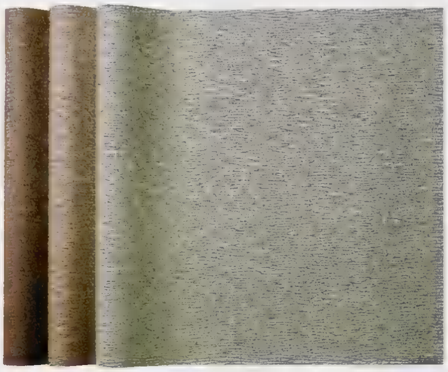
▲ New cork on the market

Kroma and Basix are two new cork flooring collections from To Market. Kroma is a series of 12 engineered colorations that create a subtle metallic and pearlized visual effect. Kroma cork tiles are approximately 24" x 18". Basix features a natural flat texture washed in a muted color-stain technique that will give the floor a solid natural finished look. Basix is available in four shades and in tiles measuring approximately 24" x 12". 877/843-8184. To Market, Washington, D.C. **CIRCLE 207**

► Fabric magnetism

Drawing on technology used for military applications, designer Michael Laessle spent a year and a half developing the Alloy panel fabric line. Through a procedure using heat and high pressure, a 100 percent polyester crepe is permanently bonded with aluminum. Passing all crocking, fading, and flammability tests, Alloy may be applied to panels, demountable walls, or selective seating. The fabric is 66" wide and available in five colors. A portion of each sale is donated to the Michael D. Laessle Foundation for AIDS Care. 800/4PALLAS. Pallas Panels, Green Bay, Wis. **CIRCLE 204**





▲ Commercially viable

Muraspec introduces Oslo commercial wall covering for corporate, hospitality, or retail interiors. Oslo features earthy metallic colors and subtle wave patterns. Available in eight colors, Oslo is composed of 54"-width Type I vinyl with a nonwoven fabric backing. Other products from Muraspec include Gallerie, a blended interpretation of textural wood and an iridescent metal; Arabella Diamond, a modern interpretation of an Art Nouveau–inspired diamond motif; and Distressed, a pearlized lustrous wall covering that creates the look of a hand-applied finish. 800/679-5120. Muraspec North America, Randolph, Mass. **CIRCLE 206**

◄ Limitless laminates

Nevamar's custom print laminates (sunflower sample shown) use digital print technology to reproduce a photographic image, logo, or geometric design on a single sheet. In addition to company logos, applications include door skins, wall panels, signage, exhibits and displays, tabletops, and seating. Nevamar's 2002/03 collection of high-pressure laminates include 19 new patterns and wood grains. Xanadu Blue, Electric, Red Dragon, and Extreme Green Bamboo (left) are among the many new patterns. 800/638-4380. Nevamar Decorative Surfaces, Odenton, Md. **CIRCLE 208**

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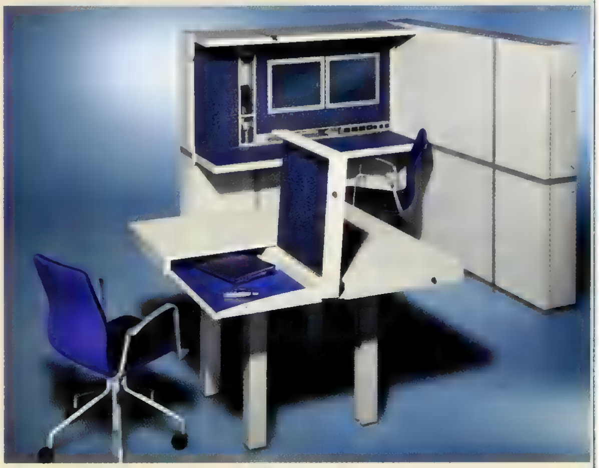
Product B

They love

Product Briefs

▲ They love Lucy

The Lucy chair, created for Vecta by Douglas Ball, combines ergonomics with an adjustable "living" back made of a new translucent, perforated material called pellethane. A "lateral flexer" pushes the pellethane forward to cradle each side of the lumbar area, and Lucy's hip pivot controls the tilt of the backrest to maintain its relationship with the body. The chair recently won a Silver Award in the IDSA's annual IDEA competition. 972/641-2860. Vecta, Grand Prairie, Texas. **CIRCLE 209**



Product of the Month Andante

Skidmore, Owings & Merrill has collaborated with Helikon, a division of the ICF Group, to create Andante, a new office system concept. The collection consists of three elements—desk, storage unit, and technology plane—that accommodate personal electronic devices, flat plasma screen monitors, Internet access, and more. The three elements can exist as stand-alone units or be connected to form an open office system. The desk opens like a briefcase to reveal a "personal technology well" with outlets. The horizontal surface splits into individual sections so that laptops and other devices may be used to enhance a meeting without obstruction. The slender technology plane contains group-oriented equipment such as flat screen monitors, teleconferencing systems, and whiteboards. The panels display or hide the technology, as needed. 800/824-6729. Helikon, Taftville, Conn. CIRCLE 210

▲ Mobile bathroom/showering facilities

A new division of Kohler, Kohler Mobile Plumbing Systems, plans to manufacture four different types of mobile units in response to demand from government agencies, the military, private businesses, and consumers for transportable showering and bathroom facilities. The company's initial offering includes luxurious bathroom suites; commercial bathroom/showering trailers; industrial bathroom/showering trailers; and decontamination units. 800/4-KOHLER. Kohler Co., Kohler, Wis. **CIRCLE 211**

► Wood wrap

Contact Lumber Company offers both interior and exterior wood-wrap products. The company can veneer-wrap virtually all species of wood to any soft wood, metal, or plastic substrate to give the appearance of solid, clear lumber. The molding shown here features Oak-Over clear grain veneer laminated to an aluminum core. 800/547-1038. Contact Lumber Company, Portland. **CIRCLE 212**

▲ Walls of learning

At the University of Nebraska's Omaha campus, when weather permits, students sit in the "snake pit," an amphitheater space that serves as a spot to study, socialize, or hold small classes. After enduring four Nebraska winters, the original tiered limestone walls began to deteriorate. As a replacement, Dakota Construction installed four tiered walls using Anchor Diamond straight-face blocks. Each of the walls is 1¼' high and winds 50' parallel to the exterior amphitheater wall. 800/473-4452. Anchor Retaining Wall Systems, Minnetonka, Minn. **CIRCLE 213**

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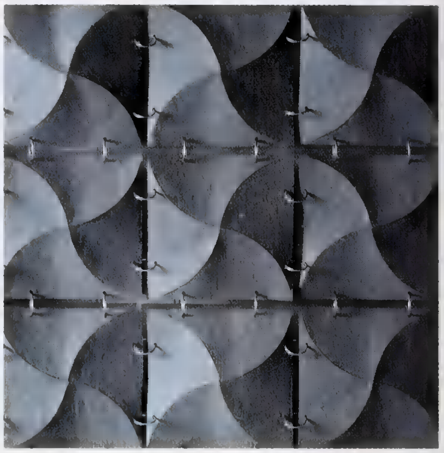
Product Briefs

A bellwether of product design is the International Contemporary Furniture Fair, held each May in New York. Here were a few of the attention-grabbing designs, including a suspended hearth and felt wall hangings. *Rita F. Catinella*

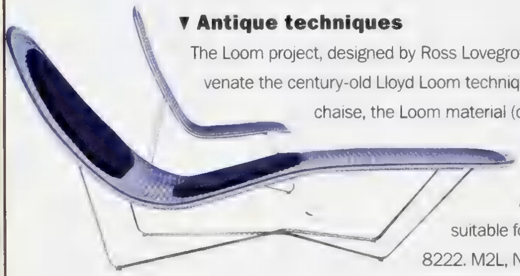
► Tactile treats

Float is a new furniture company that is the result of an artist/architect collaboration. In developing the new line, the team experimented with materials such as rubber, cast resin, and fiberglass. Characteristics such as air bubbles and variations in translucency and color give Float's line of chairs, lamps, and tables its hand-produced look. 215/413-3122. Float, Philadelphia. **CIRCLE 214**

► Haute hangings



In addition to two new furniture lines, the newly formed company FOLD introduced the Construct series of painted felt and stainless-steel interior wall hangings and the Area line of wall plaques, which use repeating elements of metal-leafed paper to create fields of modulated tones. Construct (shown) features a standard panel made of a 54"-square assemblage of 100 felt sections interconnected with stainless-steel rings. Available in five patterns and five colors, the pieces are appropriate for both residential and commercial applications. 206/322-3074. FOLD, Seattle. **CIRCLE 216**

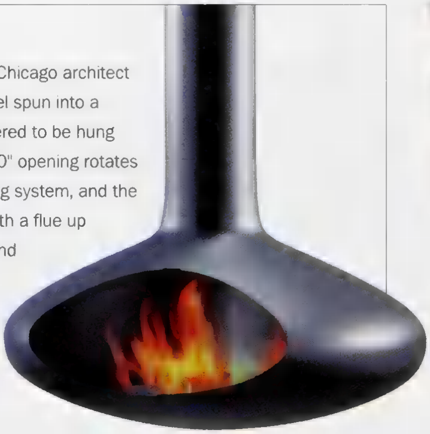


▼ Antique techniques

The Loom project, designed by Ross Lovegrove, was an endeavor to rejuvenate the century-old Lloyd Loom technique. For a lounge chair and chaise, the Loom material (dense kraft paper) is woven onto aluminum frames with stainless-steel legs. A special finish makes Loom suitable for outdoor use. 212/832-8222. M2L, New York City. **CIRCLE 215**

► Floating fire

The Fireorb fireplace, designed by Chicago architect Doug Garofalo, AIA, is made of steel spun into a CAD-governed form and is engineered to be hung easily from any ceiling. The 16" x 10" opening rotates a full 360 degrees on a ball-bearing system, and the piece can hang from any ceiling with a flue up to 40' in length. Fireorb is tested and approved to UL standards for the U.S. and Canada. 847/454-9198. Fireorb, Prospect Heights, Ill. **CIRCLE 217**

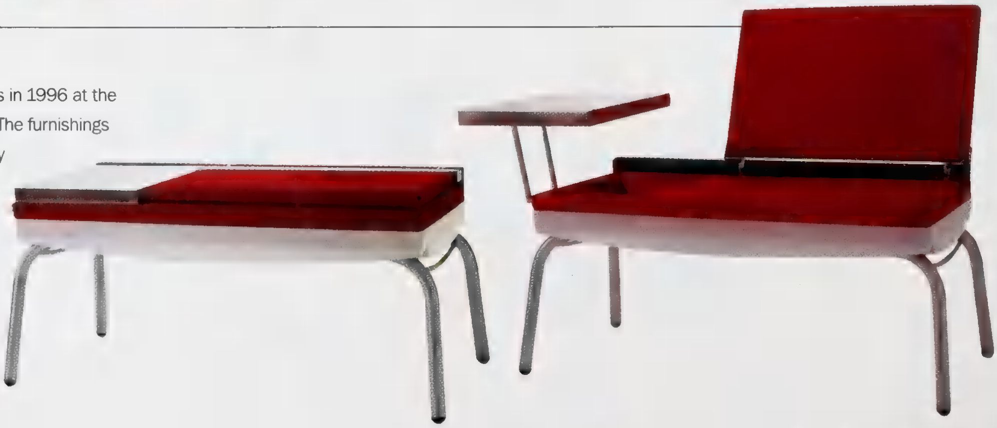


◄ Polished perches

The latest in a line of updated classics from Emeco is an aluminum stool designed by Philippe Starck. The prototype version of this stool was first used in 2001 for the Mies van der Rohe retrospective at the Museum of Modern Art in New York City, for a recreation of a café that Mies and Lily Reich originally designed. Stools are available in 18", 24", and 30" seat heights and come in either a brushed or polished finish. 310/886-9936. Emeco, Long Beach, Calif. **CIRCLE 218**

► Change your seat

Walter Craven, who founded Blank and Cables in 1996 at the age of 23, has formed Walter Craven Design. The furnishings in the new line all transform in some way; they expand, contract, flip, slide, and stack into other forms. A teak-veneered table flips open to reconfigure as a cushioned chair, while another pulls apart in the center to reveal a footrest. The flip lounger (shown) opens up from a flat bench into a backed seat with a side table. 415/648-3872. Walter Craven Design, San Francisco. **CIRCLE 219**



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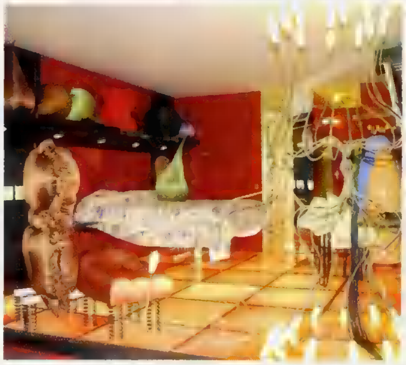
Product Briefs

During a rainy week in April, the Milan Furniture Fair and its two sideshows, Eurocucina and Eimu, showcased the newest furniture, kitchen, and office trends. A review of the best exhibitions and products follows. *Rita F. Catinella*

Micro-architecture exhibitions display the creativity of world-renowned architects during the Milan Fair



With a record 200,000 visitors this year, the Milan International Furniture Fair has gained increasing recognition not only as a showcase for the world's top furniture and product designers, but also for some of the world's best-known architects. Two exhibitions held in conjunction with the fair, Grand Hotel Salone and Interni d'Autore in Piazza, featured contributions by the likes of Jean Nouvel, Arata Isozaki, Richard Meier, FAIA, Zaha Hadid, and Bernard Tschumi.

The public space of the Grand Hotel Salone exhibition functioned as a virtual hotel during the course of the fair, with a fully operational reception area and five-star restaurant featuring the world's greatest chefs. Conceived and curated by Adam Tihany, the exhibition called on internationally renowned architects to design a bedroom for 10 different cities, giving their own personal interpretation of one of the world's great metropolises through the "hotel room of the future."

According to Paul Goldberger, who moderated a conference on the exhibition featuring the participating architects, "The idea behind Grand Hotel was to strive for a way to satisfy people's desire for a 'sense of place.' "

Toyo Ito, whose room for New York City was among the more remarkable in the show, was heavily influenced by the events of September 11, which occurred immediately prior to the start of the project. "New York has always been a city brimming with speed," remarked Ito, "but one can hardly see New York now without the image of the scarcely remaining walls of the towers. That image recalled for me a scene from Andrei Tarkovsky's film *Nostalgia*, where among the ruins of a cathedral stands the main character, quietly gazing at the water. Water calms us. I wanted to create a peaceful space for memory and prayer where visitors could look to the Manhattan skyline stretched outside their window and reflect about why such an event occurred and what we should do now."

Interni d'Autore in Piazza, organized by the Italian magazine *Interni*, featured seven micro-architectures scattered and built in various public spaces throughout Milan. The works offer an opportunity for reflection on the relationship between new design expressions and the urban scale. The event also stressed the pluralist coexistence of different architectural concepts by including the work of such varied architects as Oscar Tusquets, Peter Eisenman, and Leon Krier.

In *The Soft Bath*, Astrid Klein and Mark Dytham have taken the bathroom as the ideal space that sums up one of the ways of living in the new millennium. Their background as industrial designers shifts the scale of the project from that of micro-architecture to that of macro-object. They have also transformed the notion of the bathroom as a "hard" room, normally finished with ceramic tiles, glass, and stone, to a "soft" chamber, thanks to the use of unusual Technogel segments for the floor and walls. *Josephine Minutillo*

Gaetano Pesce's Moscow room (top left) and Toyo Ito's New York City room (top right) were the highlights of the Grand Hotel Salone exhibition. *The Soft Bath*, by Astrid Klein and Mark Dytham (center), and *The Habitation Capsule*, by M. Fuksas (above), were part of the *Interni* exhibition on the streets of Milan.

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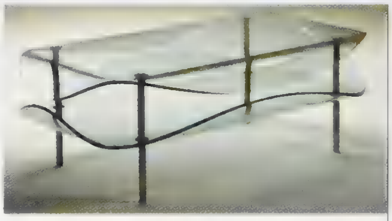
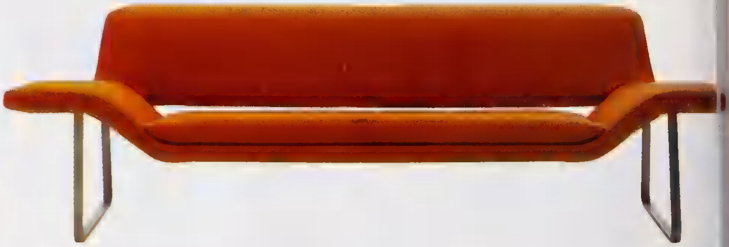


► Fragile curves

At the fair, Fiam Italia presented Marilor, a curved float-glass occasional table (shown), designed by Ron Arad. The table's two elliptical curved elements can be used either on top of, or next to, each other. The company also introduced tables by Marc Sadler, Rodolfo Dordoni, and Christophe Pillet, and a lounge bench and occasional table by the Fiam R&D Centre. 800/345-0476. Forma and Design, Norwalk, Conn. **CIRCLE 220**

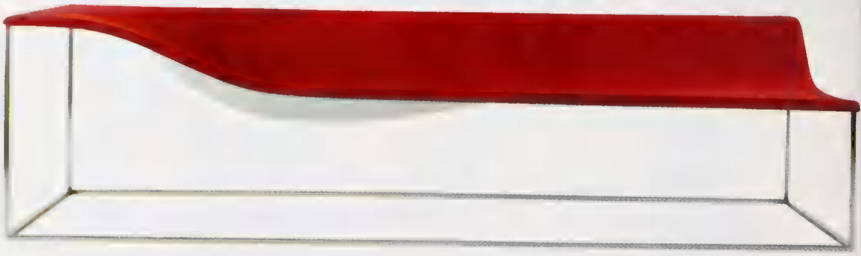


▲ Worldly sofa

Designed by Jeffrey Bernett, the Metropolitan sofa's simplicity is the result of a balanced relationship between the shape of the seat and the form of the frame, in nickeled or graphite varnished metal. A small rotating armchair mounted on a central base in bright brushed aluminum follows the same continuous sign of the seat and armrests. Bernett has also designed the Metropolitan bed, a piece with similar lines that features a slatted base in wood, a metal frame, and a side glass table with an extractable wooden tray. 800/872-1697. B&B Italia, New York City. **CIRCLE 222**

► Smooth outline

Cappellini's current roster of designers reads like a Who's Who of the industry: Tom Dixon, Carlo Colombo, Jasper Morrison, Ron Arad, Ross Lovegrove, Piero Lissoni, and Marcel Wanders, just to name a few. The Outline sofa and armchair, designed by Jean Marie Massaud, features a padded lacquer fiberglass shell covered with fabric or leather. The base is available in metal anthracite or brushed stainless steel. 212/966-0669. Cappellini Modernage, New York City. **CIRCLE 221**



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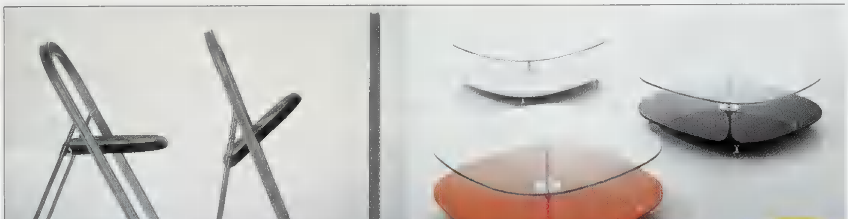
► Little black booth

The shiny black walls of the Kartell booth at the fair served as a dramatic backdrop for the uplit pieces on display. This year, Kartell included the final product of the Ploof series, presented last year as a prototype. Ploof, designed by Philippe Starck, is a collection of sofas and armchairs made with the rotation molding process in colored polyethylene. The soft seat is designed to rest on four polished aluminum feet and is available in a range of colors, including orange, mustard yellow, lilac, and pistachio green. 212/966-6665. Kartell, New York City. **CIRCLE 224**

▲ Perfectly different

Architect Gaetano Pesce's new collection for Zero is based on a technique where poured resin is formed into flat shapes that are folded and rolled into chairs, tables, and shelving units. The name of the collection, Nobody's Perfect, refers to the random color and texture that is inherent to the poured resin. At the fair, Zero also introduced new seating collections by Karim Rashid and Denis Santachiara. 401/724-4470. Zero U.S., Lincoln, R.I. **CIRCLE 223**



▲ Skinny folding chairs/chubby sofas

Bonaldo had the most exciting booth at the fair, with an array of creative furnishings, including the Giubbe Rosse sofa (right), designed by Denis Santachiara. The sofa is hollow inside for storage and is offered with an elasticized fabric cover that can create privacy in an instant. Other highlights included the space saving Ori folding chair (above left) and the retro-style Bonaldo Miami table (above right). 415/925-2701. Leif Petersen, Inc. International Furniture, Larkspur, Calif. **CIRCLE 225**

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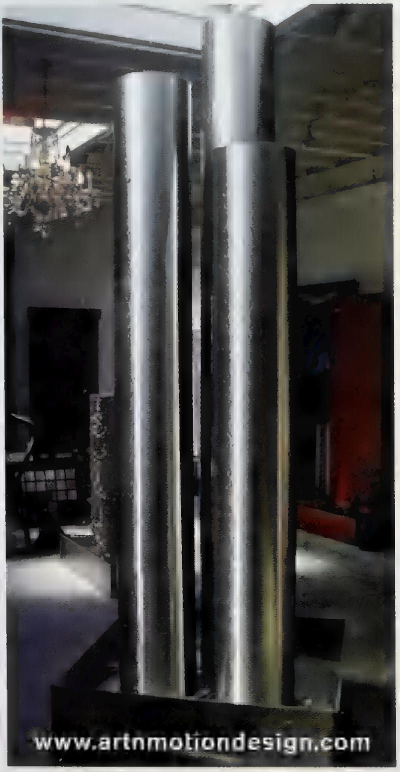

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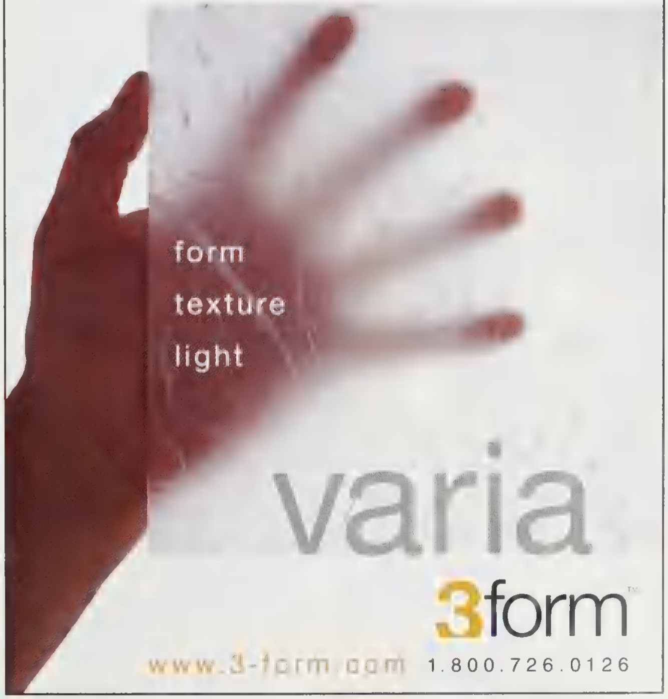

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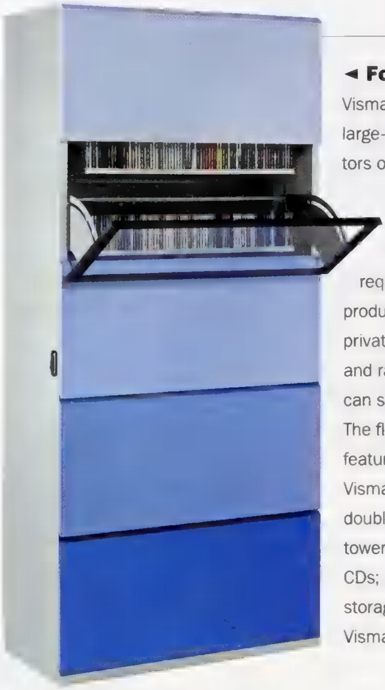
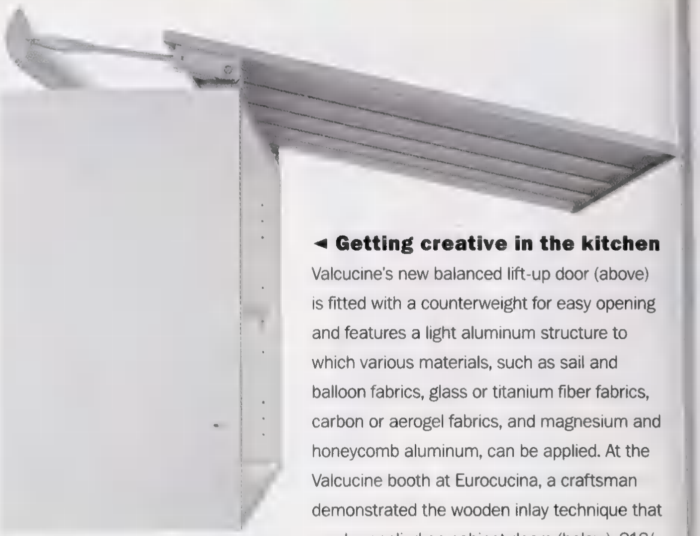


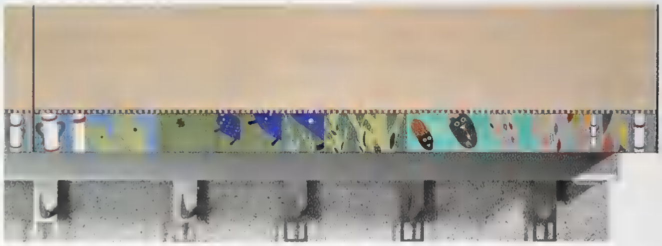
◄ For collectors only

Vismara Design offers well-designed, large-capacity CD storage for collectors of music, movies, and software. Rotary Station, the first motorized CD rack from the company, will also satisfy the requirements of companies such as production studios, banks, public and private offices, libraries, museums, and radio stations. Rotary Station can store 1,008 CD cases in 14 rows. The flap door is tempered glass and features a safety switch. At the fair, Vismara also displayed a CD rack that doubled as a screen; a revolving CD tower; the Hook System of suspended CDs; and an array of modern CD storage options. 39 0362503726. Vismara Design, Milan, Italy. **CIRCLE 226**



◄ Getting creative in the kitchen

Valcucine's new balanced lift-up door (above) is fitted with a counterweight for easy opening and features a light aluminum structure to which various materials, such as sail and balloon fabrics, glass or titanium fiber fabrics, carbon or aerogel fabrics, and magnesium and honeycomb aluminum, can be applied. At the Valcucine booth at Eurocucina, a craftsman demonstrated the wooden inlay technique that can be applied on cabinet doors (below). 212/253-5969. Valcucine, New York City. **CIRCLE 227**



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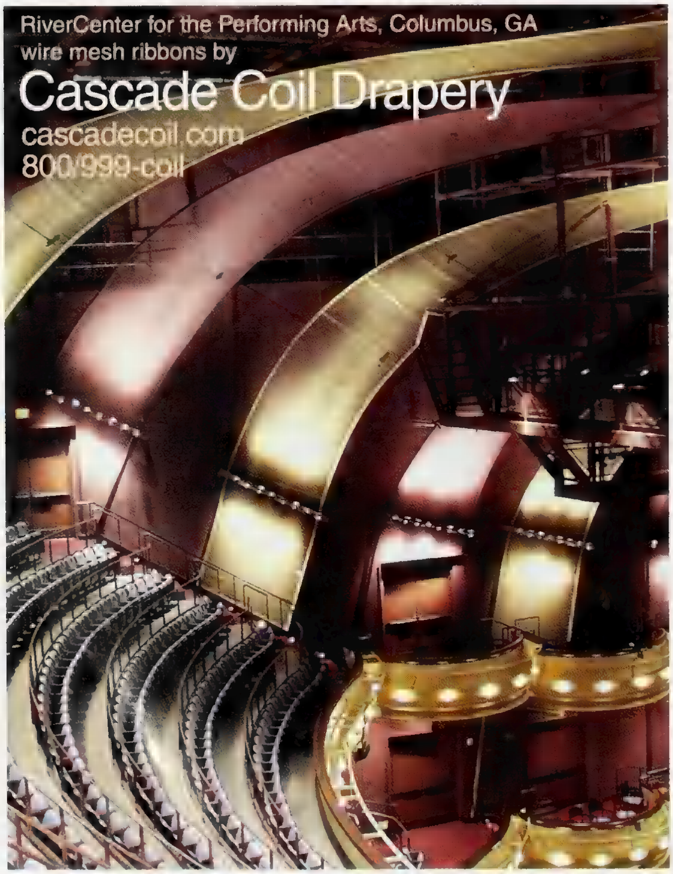

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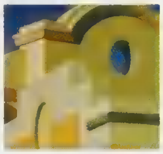

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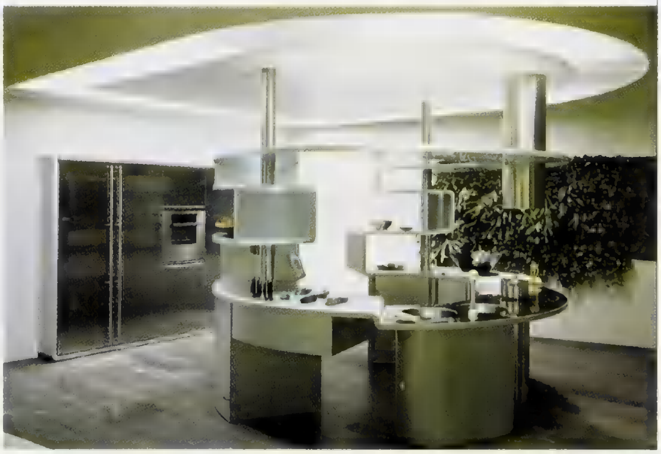
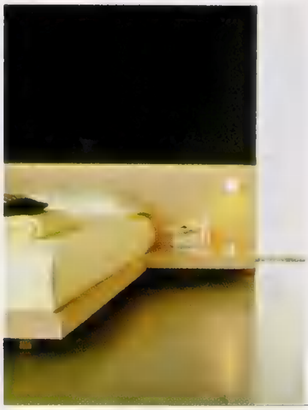
▾ Futuristic feedings

Snaidero unveiled a range of kitchen concepts at Eurocucina, including Acropolis, Ferrari-stylist Paolo Pininfarina's futuristic design in aluminum and stainless steel. Featuring a concentric shape and suspended elements, Acropolis comes complete with a computerized system that brings the management of appliances, radio, television, and the Internet all within arm's reach. All new designs will be available in the U.S. market in 2003. 310/516-8499. Snaidero USA, Los Angeles. **CIRCLE 228**





◂ Peaceful dreams

The Ando bed, designed by Italian architect Paolo Piva for Poliform, delivers Zen-like simplicity through a simple frame headboard that creates a backdrop for the "virtual" floating bed and attached end tables. The Ando bed, as well as complementary bedroom furniture and accessories, is available in bleached oak (shown), wenge, as well as the complete Poliform lacquer palette. 888/POLIFORM. Poliform USA West Hollywood, Calif.

CIRCLE 229

▸ High style, lower cost

The Nimrod chair, designed by Marc Newson for Magis, features a blow-molded polyethylene body and cushions that are co-molded in expanded polyurethane. While Newson has designed many chairs for the company, the Nimrod armchair was conceived in a way expressly to obtain a lower price point. 415/925-2701. Leif Petersen, Inc. International Furniture, Larkspur, Calif.

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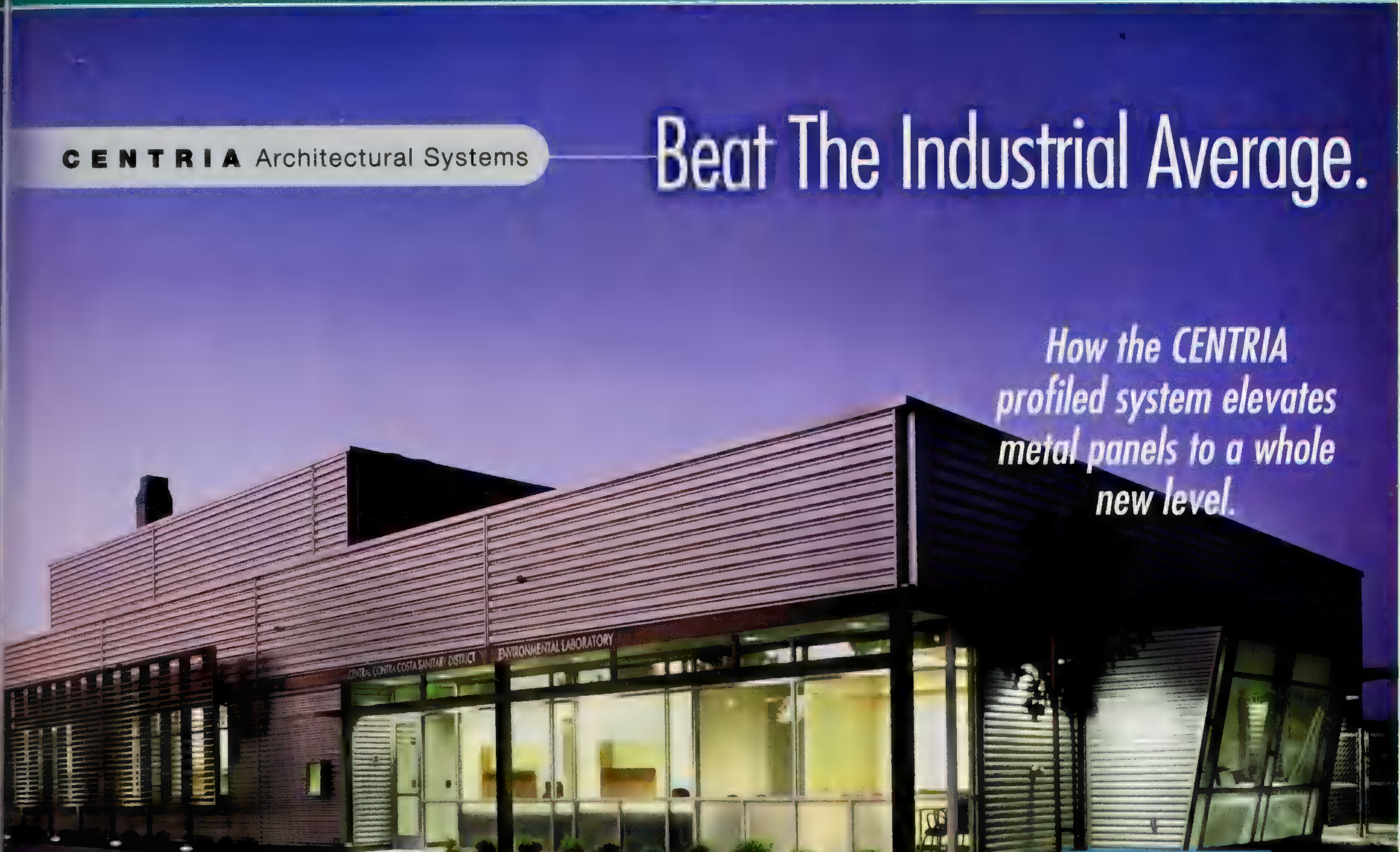

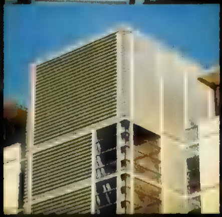

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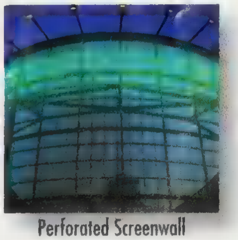

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Azrock Integrated Flooring 2002, a six-piece resource kit, features applications of Azrock flooring from Domco Tarkett Commercial. The kit is packaged in a book-size box that can be stored on a bookshelf for easy reference. It includes the 2002 Azrock full-line catalog; the Azrock design book *Design Inspiration*; the 2002 Azrock color palette poster; and environmental, retail, health-care, and educational brochures. 800/558-2240. Domco Tarkett Commercial, Houston. **CIRCLE 237**

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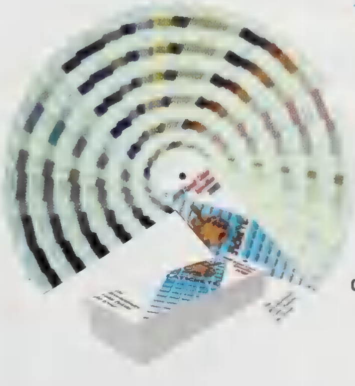

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RICHARD MEIER *(continued from page 106)*

since everything around the World Trade Center site is 55 stories.

AR: *The ghastly changes proposed to convert your Bronx Developmental Center of 1978 into an office building [ARCHITECTURAL RECORD, March, page 23] must have been another sort of shock.*

RM: Shock, horror, sadness, and disbelief all apply. I believe in progress and change, but when you see your own work being destroyed for something that is not going to be half of what it was, you wonder. It just needed a good cleaning.

We talk about architecture being like your child—when it's built, there's a point it has a life of its own, and you hope it's a good one. You've given it all the learning and experience you have. For the most part, I feel very gratified when I go back and see buildings I did 10, 15, and 20 years ago.

AR: *How have you been affected by changes in technology? Such as virtual architecture?*

RM: With virtual architecture and anything ephemeral, the idea behind it has to be relevant and meaningful. Otherwise it's without ideas and who cares? I also have a real peeve, which everyone in this office knows very much firsthand, and I've expressed it to students whenever I can. Everything is drawn on the computer so we can do certain things faster, and hopefully more accurately. But many people, especially those coming out of school today, show a lack of understanding of scale. And I don't only mean the scale of the spaces they are drawing on the computer, but the scale of a line, which determines the scale of that opening. How big is that door? This has to do with scale at every level, from the overall concept to the last detail. Often someone will say, "I'll measure it." But, you shouldn't have to measure it—you should know what you're drawing.

Richard Meier, shown with a model of the Peek & Cloppenburg Department Store in Mannheim, Germany.

AR: *Do you use this computer technology in the office? Do you build your models virtually?*

RM: No, no, we still build actual models. We use the computer for presentations.

AR: *American architecture has taken a drubbing for playing it safe—for a lack of risk-taking. What do you think about the status of American architecture today?*

RM: Architecture's in a great place at the moment. There's an extraordinary amount of innovation and creativity, as well as a return to a search for clarity. We see this not only in America; we see it all over the world. Communication is faster than ever—it's really creating an awareness and thoughtfulness on the part of architects everywhere. There's a search for what's meaningful and appropriate to the place, and for the most straightforward, simplest way to express architectural ideas. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

Program title: **New Building Systems Mimic Nature and Return to a Biocentric Approach to Design, Architectural Record (09/02, page 173).** 09YEDITR

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2.	a	b	c	d	**7.**	a	b	c	d
3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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3.	a	b			**8.**	a	b	c	d					
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3.	a	b	c	d	**8.**	a	b	c
4.	a	b	c		**9.**	a	b	
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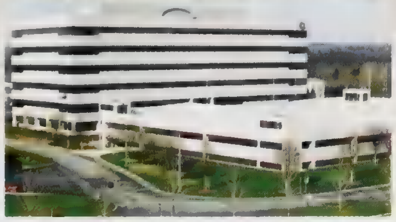

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3.	a	b	c	d	**8.**	a	b	c		**13.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b							
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WHERE WE STAND

AIA Mid-Year 2002 Financial Results

To members of the AIA,

At mid-year, AIA's financial performance continues to be strong. As of the end of June we remain ahead of plan for the year.

Total Net Income Better Than Forecast
Total revenues for the first six months of 2002 are higher than planned as a result of increases in membership dues revenues, higher than expected sales of AIA Contract Documents, and better than expected convention receipts. At the same time, expenses are slightly below budget resulting in total net income for the first half of $9.99 million. This is an improvement of 4.4 percent over budget.

Staying The Course
We intend to continue working toward the third year in a row of fiscal stability and asset growth. It is management's goal to meet or exceed the financial targets set forth in the Board's three-year financial plan adopted last year so that we can better serve you.

I welcome your comments.

Sincerely,

Norman L Koonce

Norman L. Koonce, FAIA
Executive Vice President/Chief Executive Officer

AIA Financial Results June 2002 ($000's)

	YTD June Budget	YTD June Actual
Revenue Operating Expense	$27,143 (17,685)	$27,366 (17,489)
Operating Net Income	**$9,458**	**$9,877**
Non-Operating Income	102	99
Unrestricted Net Income	**9,560**	**9,976**
Restricted Income	10	14
Total Net Income	**$9,570**	**$9,990**

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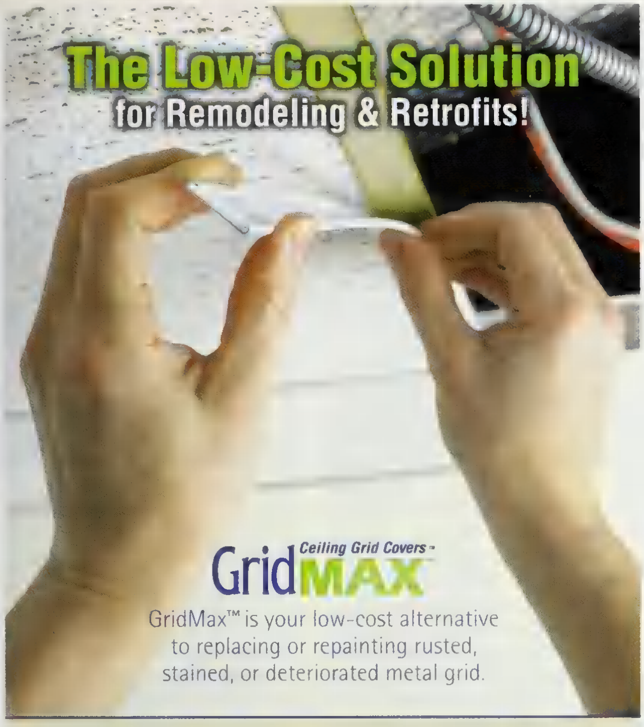
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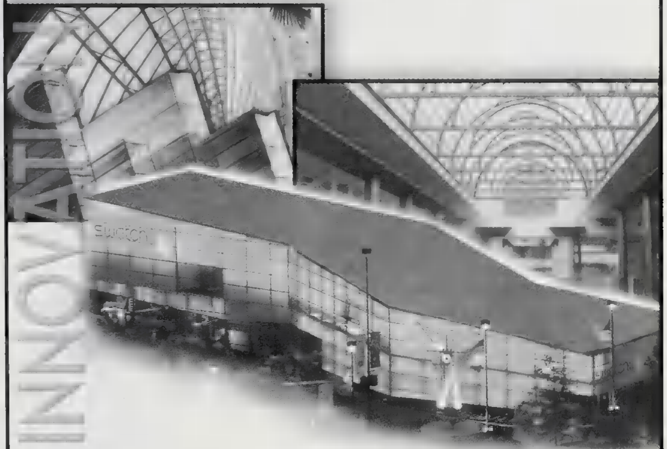

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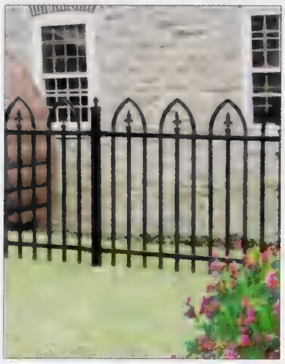

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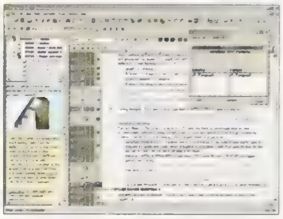

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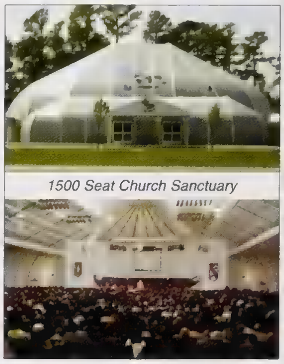

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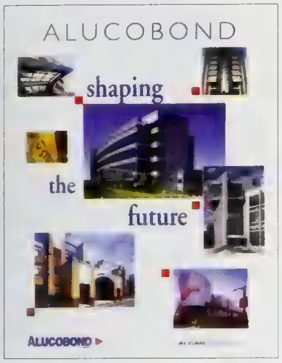
MANUFACTURERS' SPOTLIGHT

Alucobond® Material Brochure



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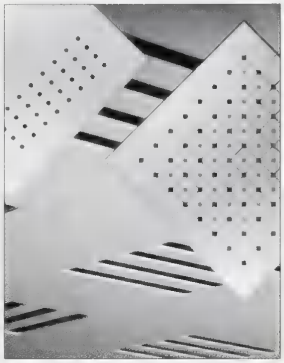

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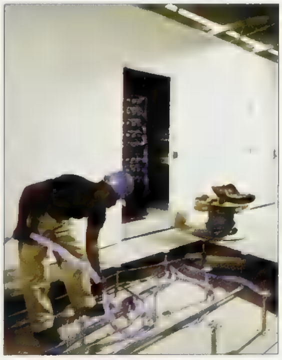

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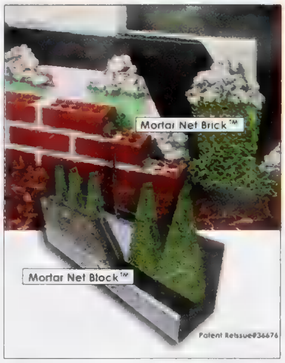
Mortar Dropping Collection Device



Mortar Net invented the mortar dropping collection device for brick masonry cavity construction and single wythe concrete masonry units (CMU). By breaking up mortar droppings, Mortar Net for brick and Mortar Net Block prevents mortar debris from forming a barrier against water flow to the weep holes thereby eliminating moisture damage to masonry walls. For more information call 800-664-6638 or www.mortarnet.com.

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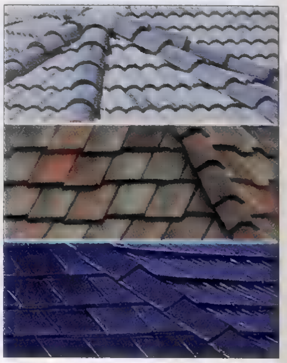

A tile roof adds classic beauty—and real value—to any structure. Tile comes in an array of colors and finishes, from bright blue to subtle brown, rough textured or smooth. They can simulate wood or slate, and be installed in a variety of patterns. And tile roofs are so durable they can last 50 to 100 years! For real beauty and value, nothing compares to tile. Call 1-888-321-9236 or visit us at www.rooftile.org.

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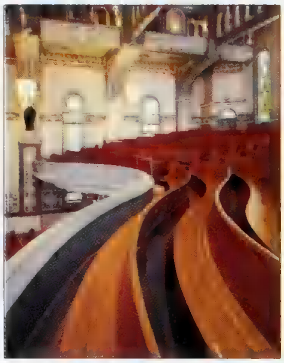

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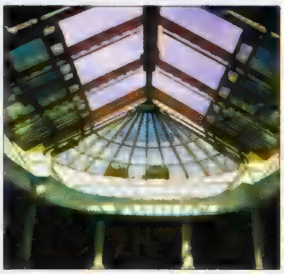

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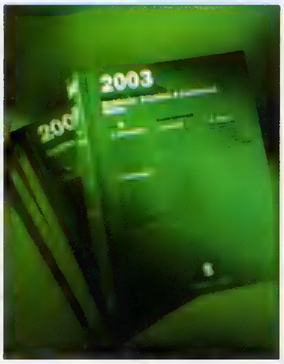

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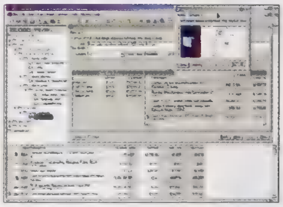

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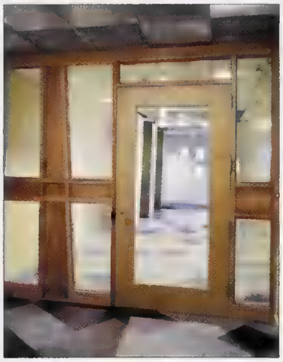

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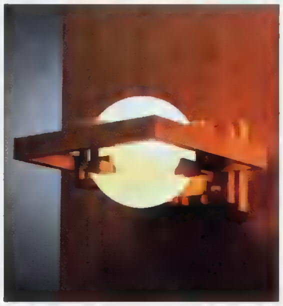

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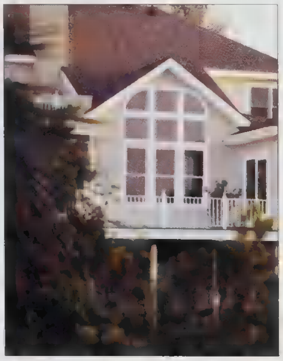

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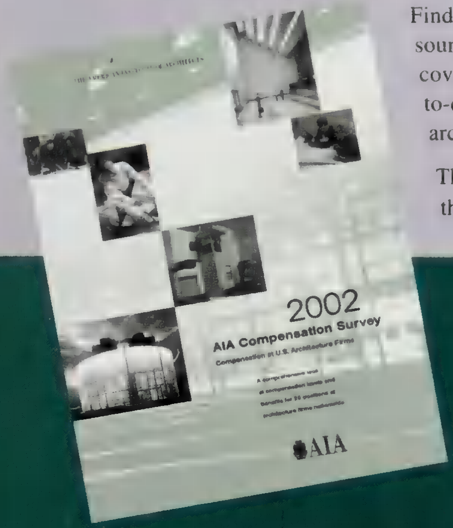

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Konstantin Grcic: Transforming design with everyday objects

Interviewed by Josephine Minutillo

From tables and chairs to buckets and shoe racks, the young German designer Konstantin Grcic (pronounced gir-chic*) has an ability to inject both beauty and wit into the objects he creates. The designer whom the legendary Achille Castiglioni calls his "spiritual heir," Grcic was recently honored with the prestigious Compasso D'Oro prize for his May Day lamp (designed for Flos in 1998). Earlier this year, he curated an exhibition at the Busch-Reisinger Museum at Harvard University called* Goethe/Grcic: Quotidian Objects. *In the show, organized by the Casa di Goethe in Rome, Grcic displayed everyday objects, like buttons and paperweights, that once belonged to Germany's foremost poet, Johann Wolfgang von Goethe.*

Q: *Goethe was one of the first men in history to enjoy celebrity status during his own lifetime. Why then did you choose to include such seemingly trivial items in an exhibition on such an important figure?* The museum in Rome was very interested in including the usual sort of objects for this type of show—his clothing and writing instruments, for example. But I wasn't interested in those kinds of fetishistic objects; I'd rather have a cork on a string or a broken piece of wood. The appeal of an object for me has nothing to do with its age or material value, and even less to do with the fame of its former owner. Goethe was a great writer but also a great traveler and a manic collector.

On a more personal note, you and Philippe Starck were the first non-Italians to win the Compasso D'Oro. Was it a surprise? Last year, for the first time, they opened the doors for a foreigner like me who doesn't live in Italy. It's very flattering. But it's just as nice for me to see people who don't really think about design so much, who buy products without knowing the designer or how important a designer's name attached to a product is. Sometimes I will come into somebody's flat and under their, desk, without knowing it, they have a wastepaper bin that I designed. [To see that] I think is a really great kind of award.

How many projects do you usually work on at a time? Let's say 10, but some projects are so slow we don't have to do anything with them for half a year. That's also why I love working in this industry. There's always a period when we work on a project, then give it to the manufacturer, and for the next three months or so they'll work on it. Then they give it back to us, but in the meantime we can do other things.

Have you ever been disappointed with the way something has turned out? All the time.

Is this due to problems of production? [It is due to] many things, including problems of production. But I always think that those kinds of problems can be turned into something positive if there is an opportunity to really discuss why it is a problem and how we can solve it.

Manufacturers always approach you with a specific object they would like you to design for them. If given the opportunity, is there anything you would like to design? [After hesitating for a moment, he responds with a smile …] Yes, a really fast car.

Photograph by Daniel Mayer of Grcic with CHAIR_ONE, his new design presented at the 2002 Milan Furniture Fair by Magis

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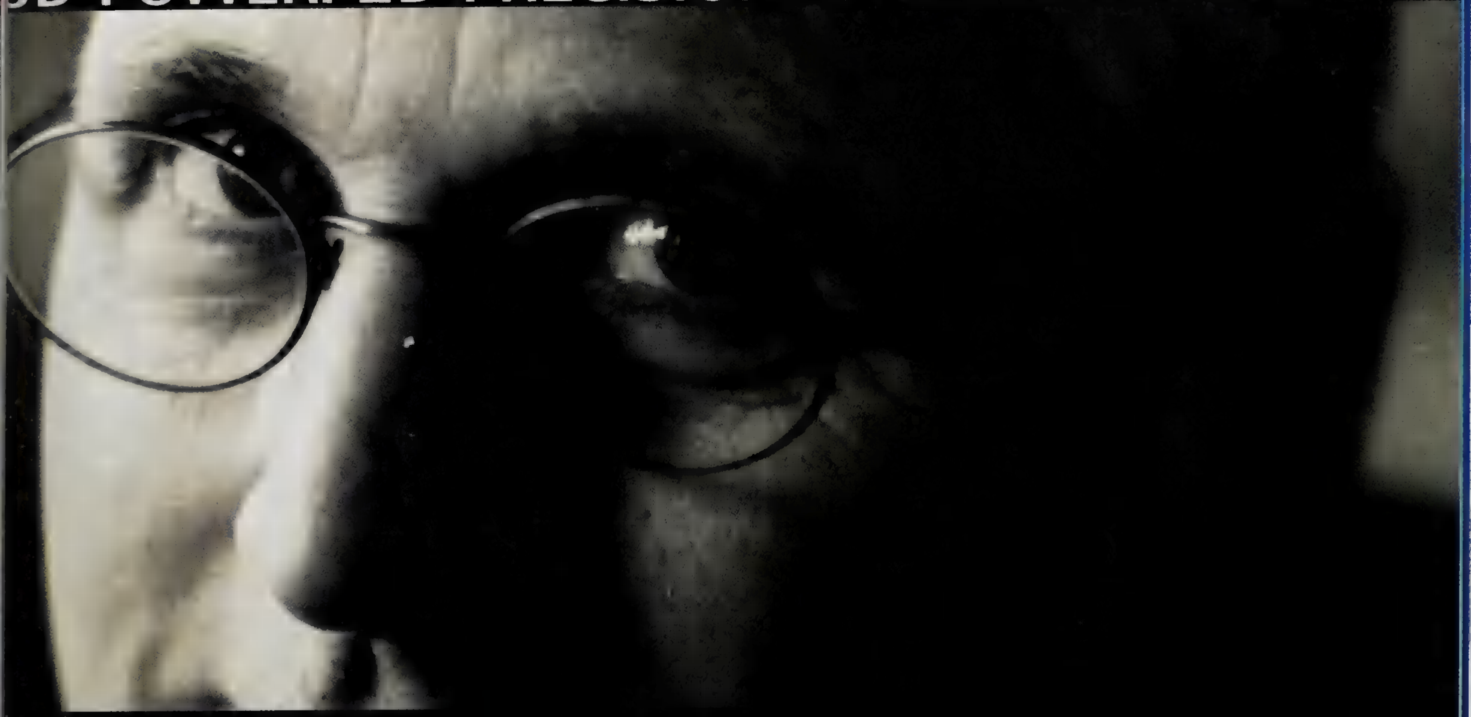

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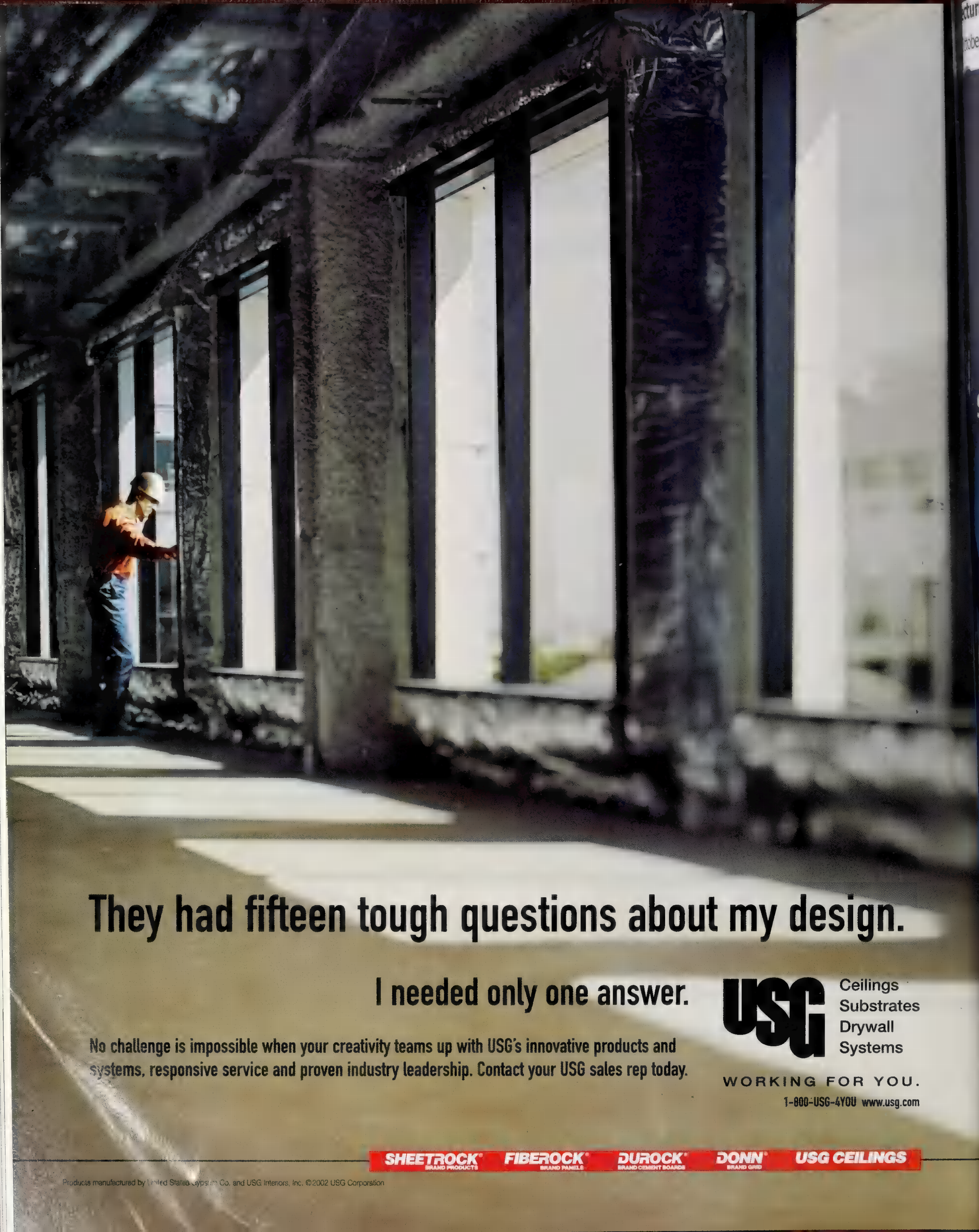

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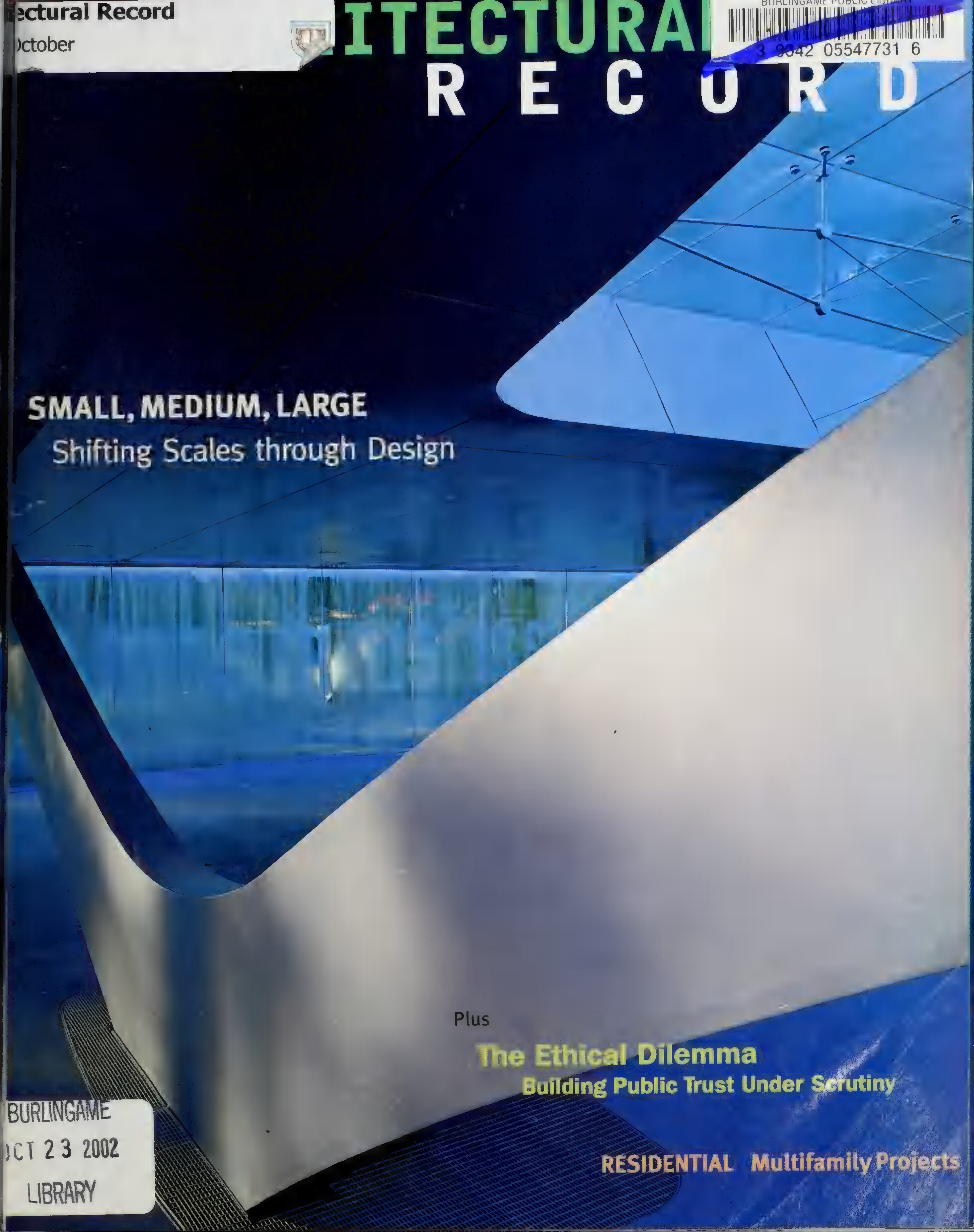

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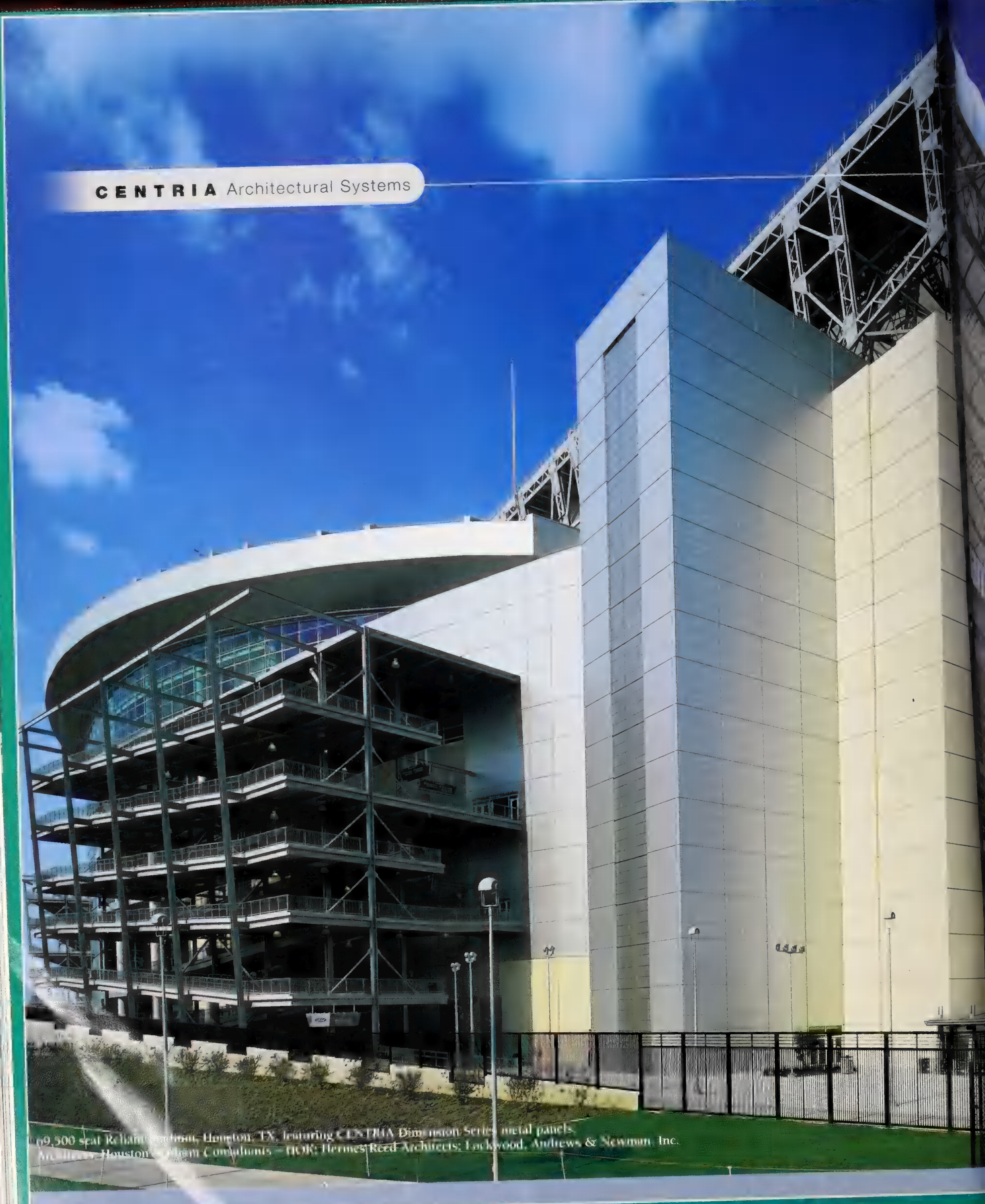

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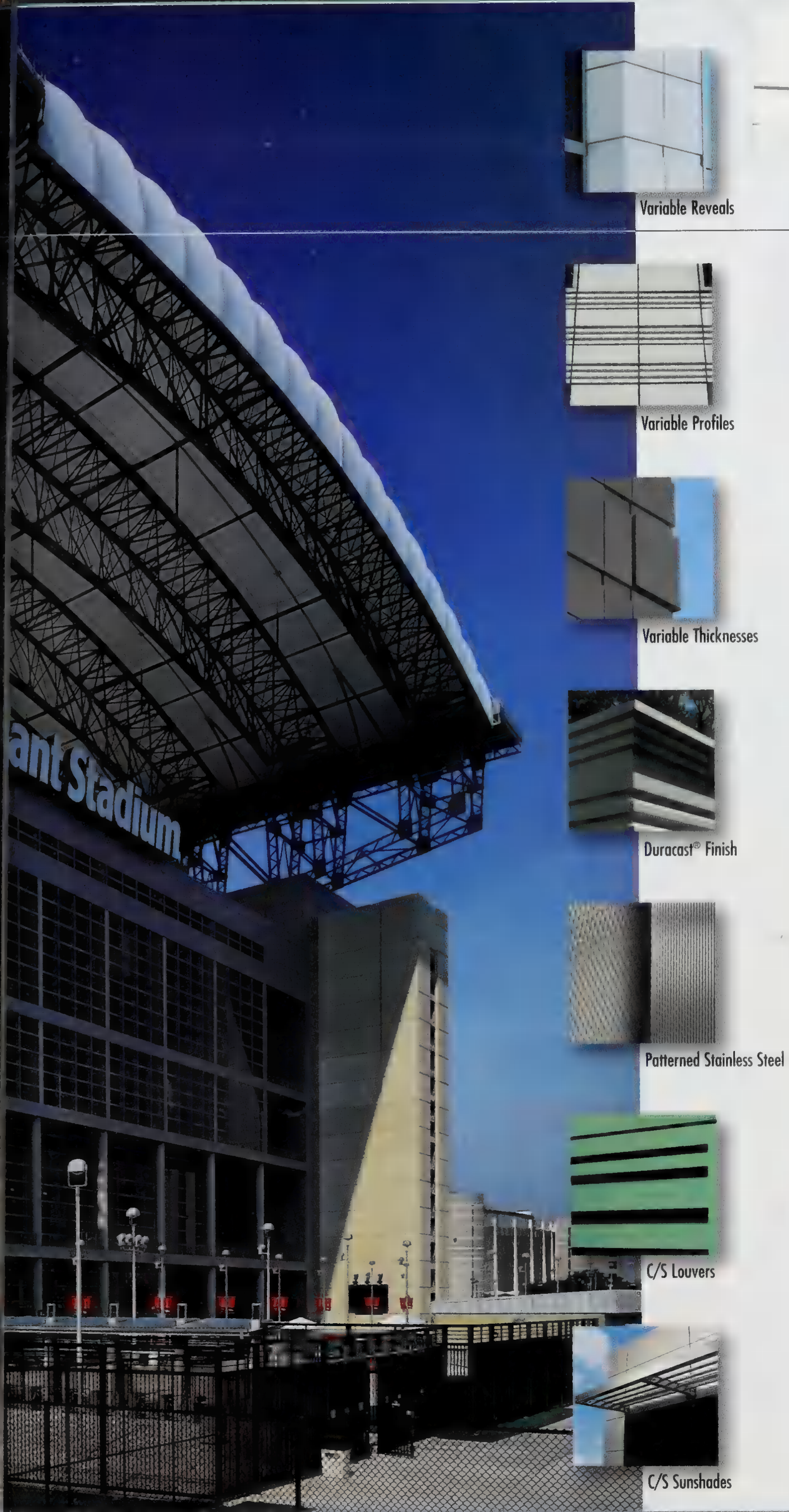

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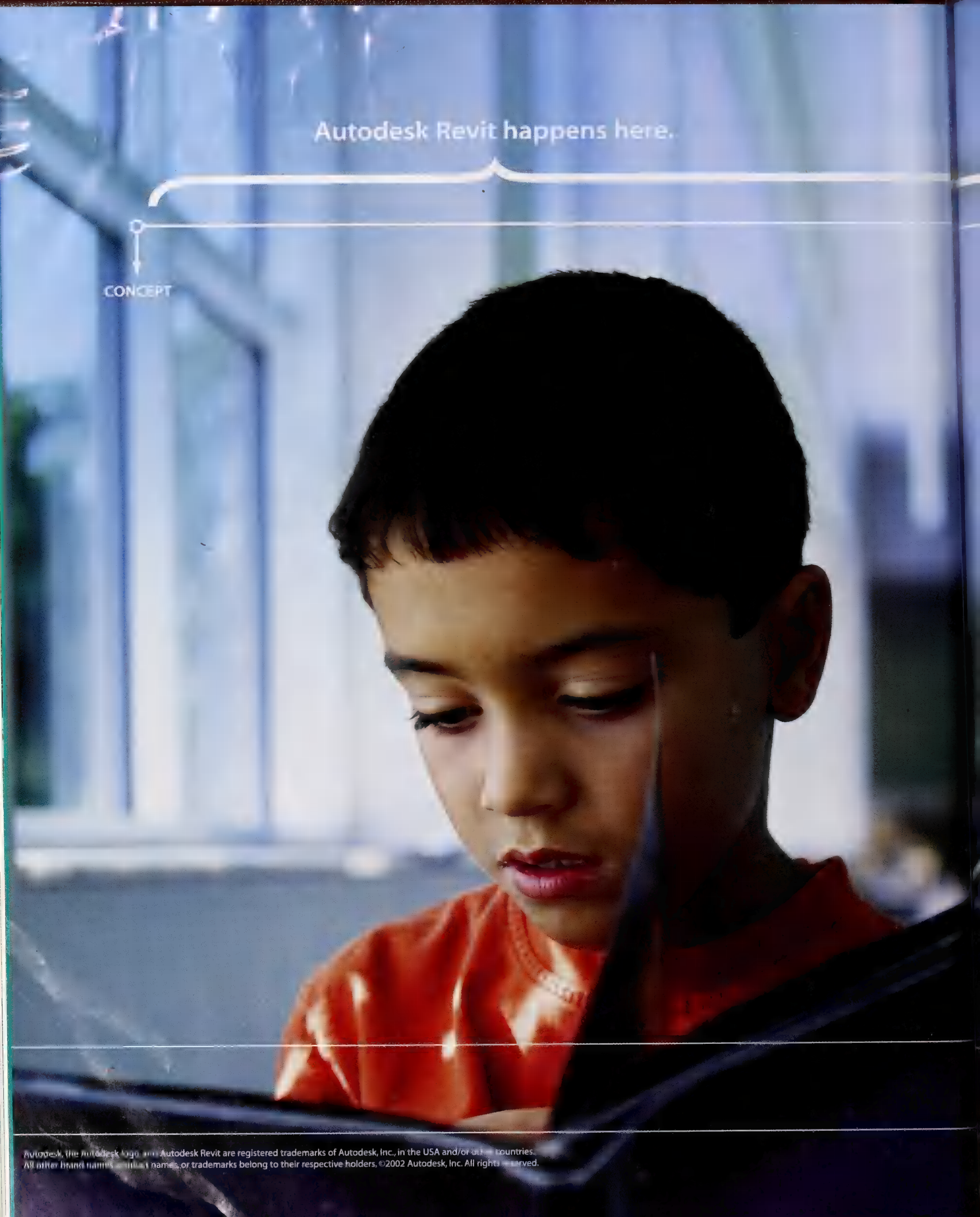

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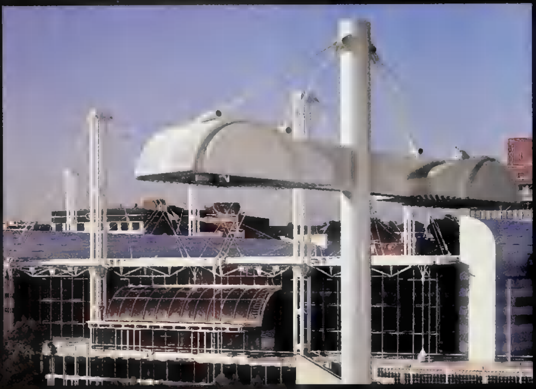

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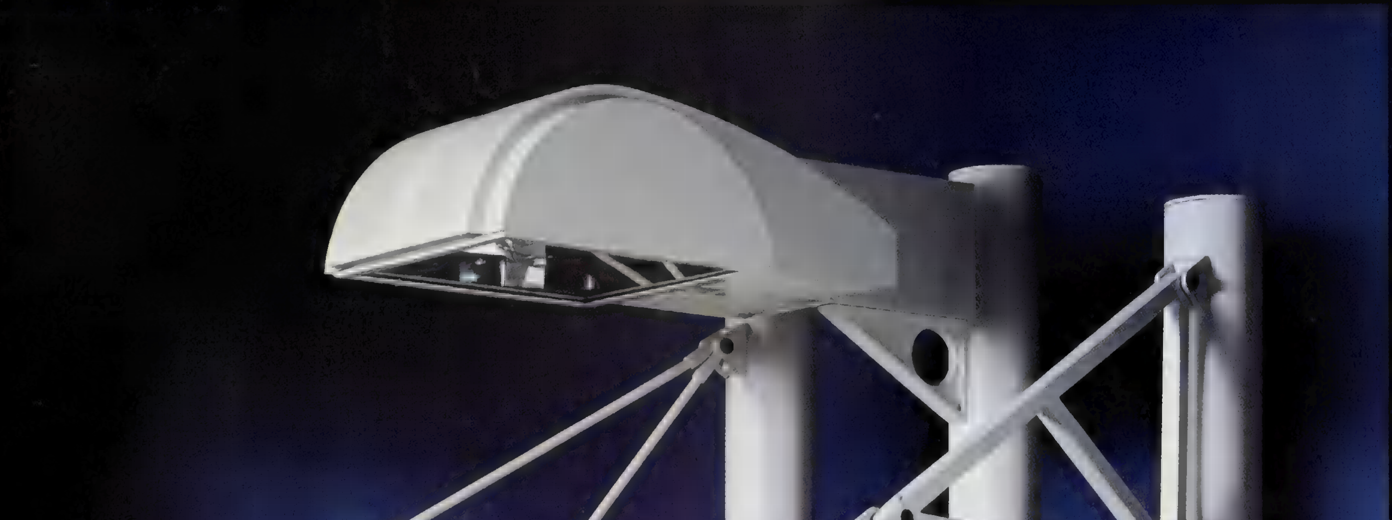

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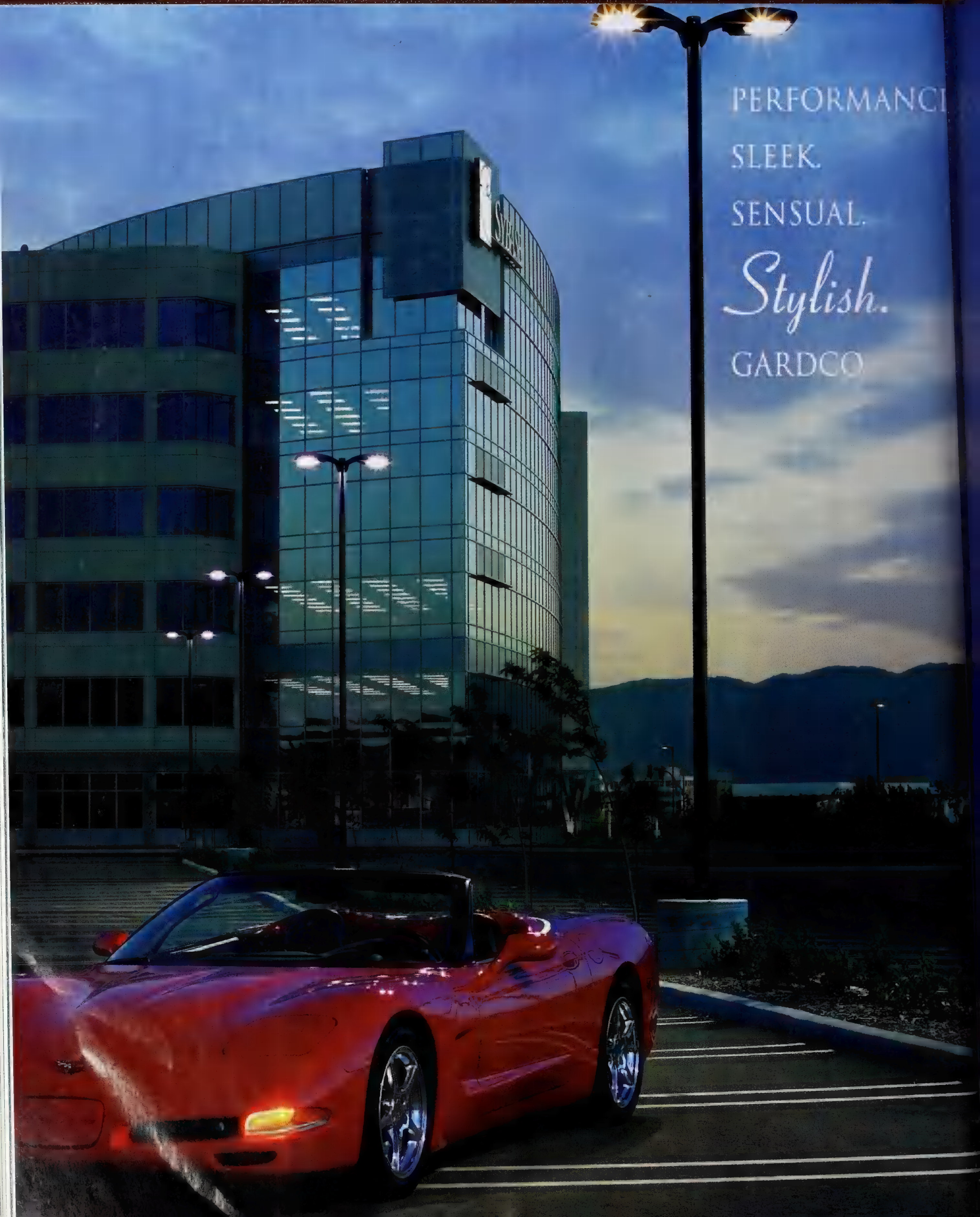
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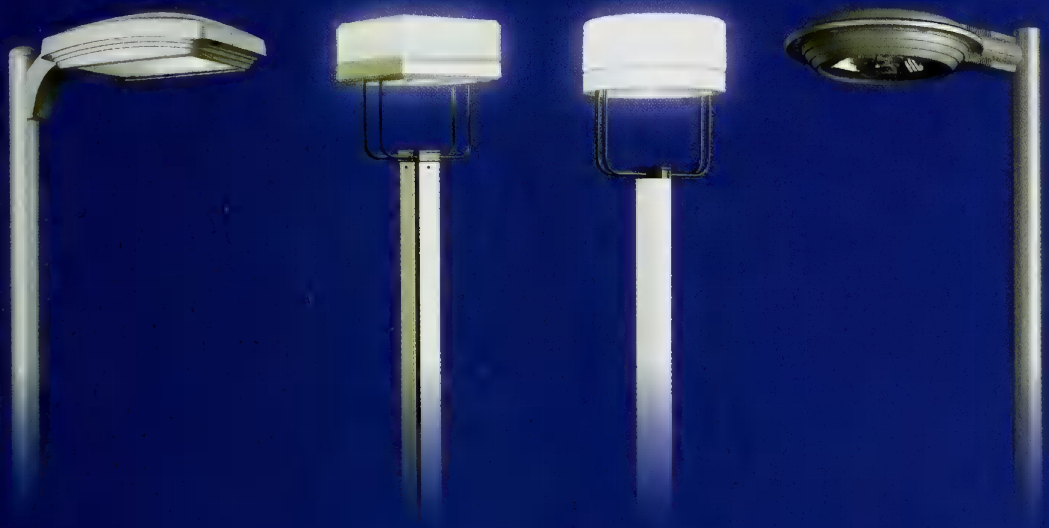

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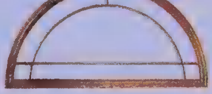

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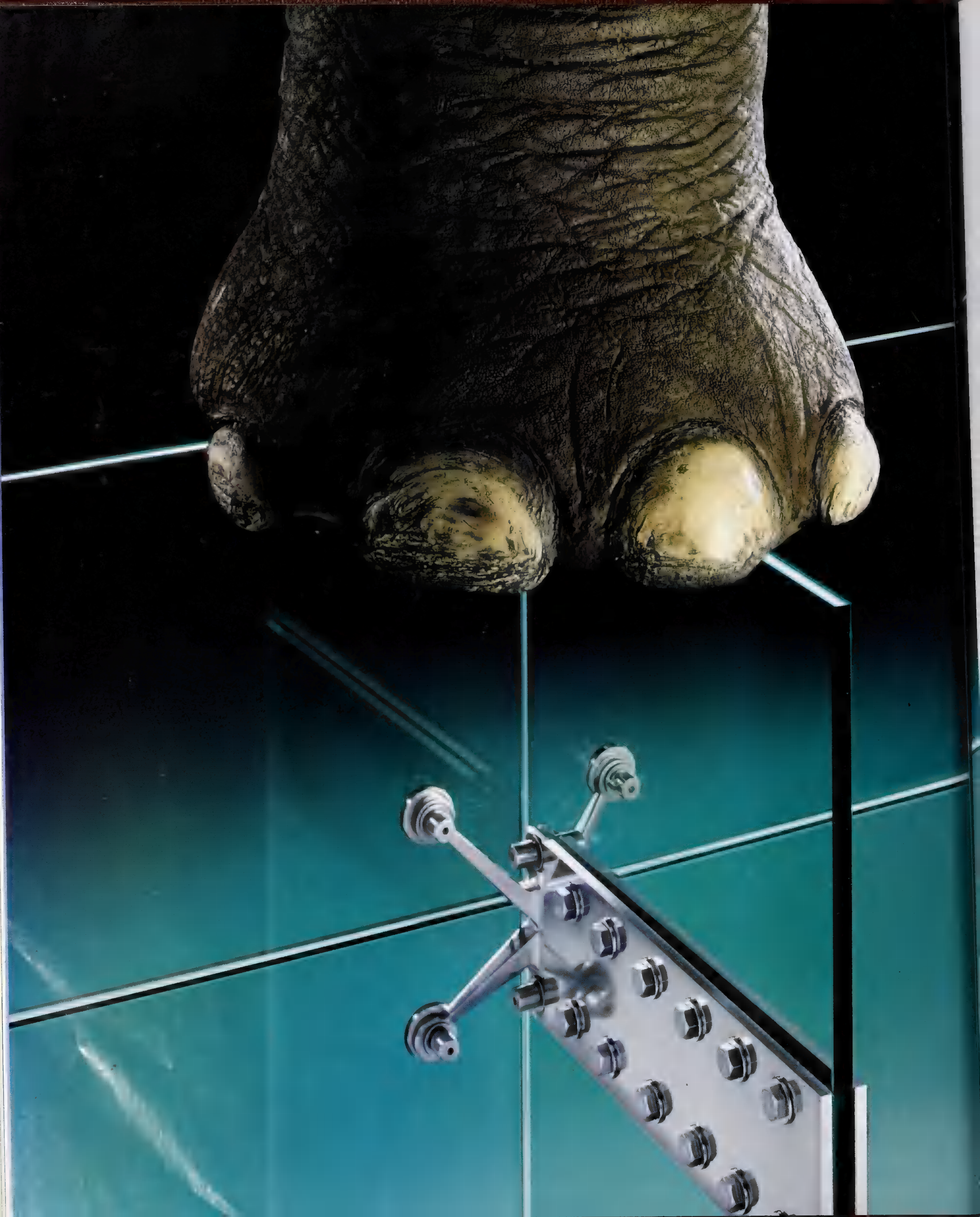

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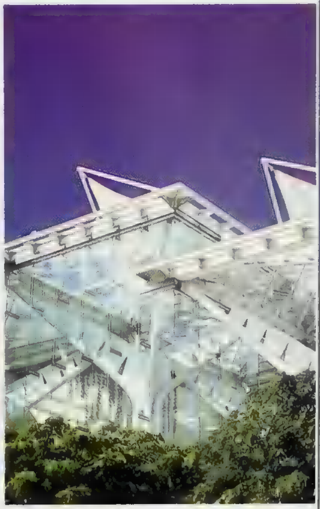

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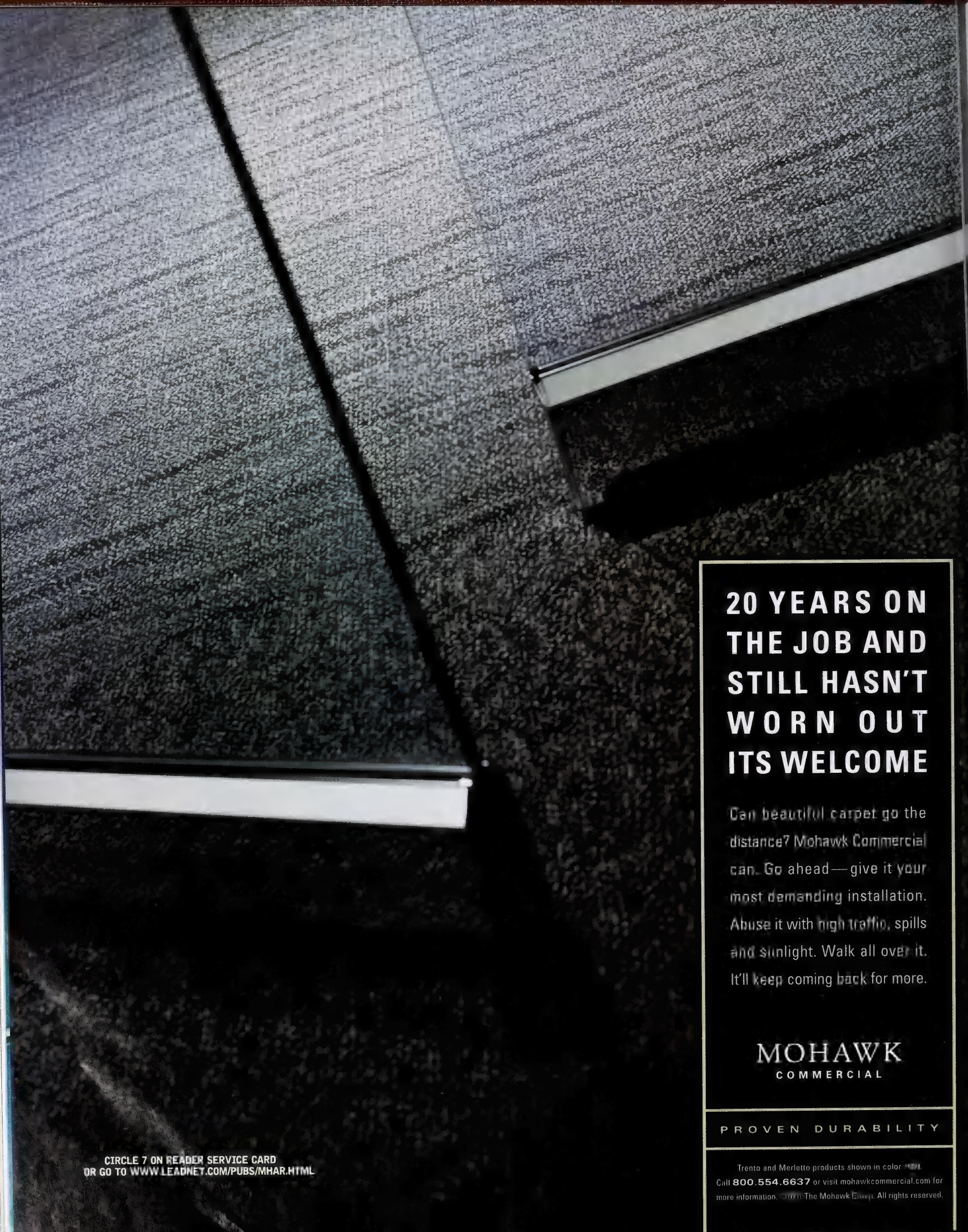

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On the Cover: *HydraPier, by Asymptote. Photograph by Christian Richters*
Right: *Imperial War Museum North, by Studio Daniel Libeskind. Photograph by Richard Bryant/Arcaid*

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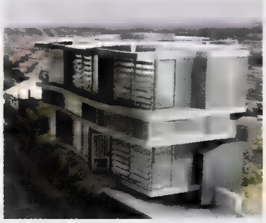
DESIGN Ann Arbor, Michigan architect Keith Mitnick bridges the divide between theory and practice. See a complete portfolio of his work, exclusively online. Plus, more news and features from the world of the emerging architect.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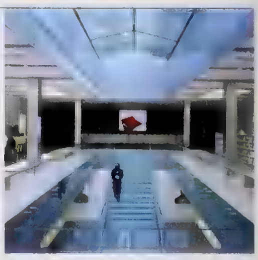
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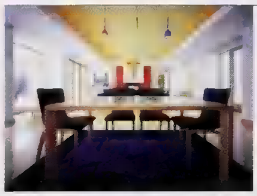
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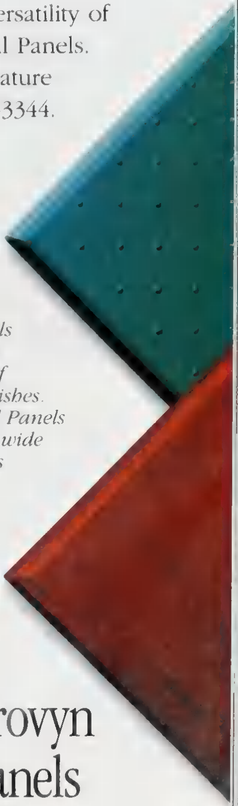

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Editorial

A Public Advocate

By Robert Ivy, FAIA

Architects and other designers deserve a public advocate. For several years, architectural critics have touted a rise in popular appreciation for good design. Perhaps as a result of the events of September 11, 2001, for the first time in many years design seems to be on everyone's lips, from professors to schoolchildren. Ordinary people as well as the erudite are looking for design to solve problems, but also for something more. Daniel Libeskind equates our search at Ground Zero with a spiritual quest.

At this critical juncture, architects need strong voices in government and in our communities. Our concerns extend beyond the immediate headlines of terrorism and war; we need leaders capable of articulating the everyday issues we face as a civilization: the spread of urban blight to the suburbs from the cities, the ennobling potential of housing, the beneficial role of design throughout the public realm, alternatives to the bunker mentality in an insecure world, the glories of open space. The need in government alone is staggering: the EPA, the GSA, HUD, and the Department of State control millions of square feet of buildings and can help determine future trends. Where can we find someone to describe the role of design in our culture, and then convince others of its worth?

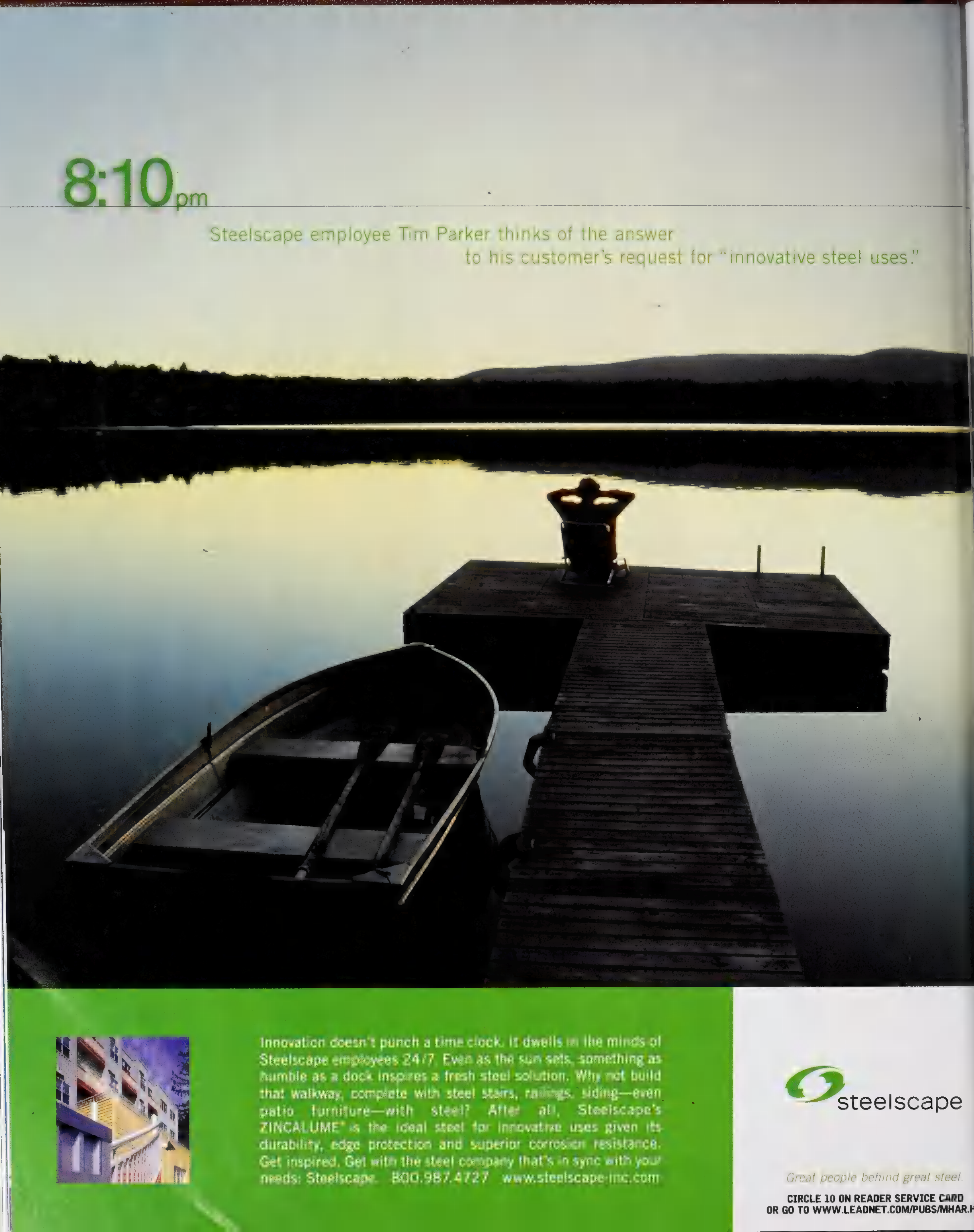
For the past 35 years, the National Endowment for the Arts (NEA), and particularly its director of design, has worked to promote not only architecture, but all design, with the potential for a direct effect on what we architects do and what we care about. Ronald E. Bogle, the new executive director of the American Architectural Foundation (AAF) and a former Oklahoma City resident, witnessed firsthand the effectiveness of one program, the Mayors' Institute of City Design, following the bombing of the federal building there. He believes that the mayors' program, a partnership of the NEA, the U.S. Conference of Mayors, and the AAF, has developed "a hands-on program that brings the resources of the profession to mayors with the practical problems that they deal with." Today's climate demands increased investment in such efforts.

While its current programs remain effective and intact, the NEA faces challenges that all architects deserve to understand. First, the organization lost its director, Michael Hammond, who died shortly after taking office in January 2002. An acting chairman has filled his position awaiting the next appointment. While funding appears to be proceeding satisfactorily, the entire Department of the Interior's budget is being written, negotiated, and reviewed on Capitol Hill this fall. In tight economic times, anything might happen.

More challenging, however, may be the fate of the design director's position. Mark Robbins, the previous office holder, has stepped down as director of design after a tenure that witnessed greater visibility, an increased budget for the department, and growth in vital programs. Today, however, staffing for design seems minimized, limited to grant recipients outside the directorship. Obviously, the Graham Foundation cannot fund the U.S. government. For the coming year, replacing the directorship with a strong individual backed by adequately funded programs should be a priority for the NEA.

Now is the time to speak out for the program's growth, not retrenchment: The benefits far outweigh the minimal costs. Architects will be well served to visit the NEA Web site, www.arts.gov, to learn more about current programs, including the composition of the council and its leadership. More important, we should let our own congressional delegations—our national representatives and senators—know the importance of the director of design. Why? Because in this troubling time, as they will no doubt in the future, Americans are looking for answers that only design can provide, in a language the entire world can understand. We need, and deserve, a government advocate at the highest level.

Robert Ivy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Letters

A master mentor

I had the pleasure, and sometimes the burden, of working with Richard Meier [RECORD, September 2002, page 100] for over seven years on the Getty Center project. I was a senior associate in his Los Angeles office and in charge of all his on-site construction administration. I was also in charge of researching stone quarries, suppliers, and fabricators, and developing and constructing full-size design mock-ups for Richard's approval.

On that project, all of the plan and elevation elements were drawn by use of the computer. A very large portion of the project detailing, however, was drawn the old-fashioned way, by hand. One consistent message that Richard Meier had for everyone on the job—whether they were the most senior or most junior of us; whether they were someone who spent the day in front of a computer or someone who sat at a drafting table; or whether they were one of my field architects and seldom came into the office—was, "think about what you are doing, and when you are done, make it look as if an architect had made it happen."

This simple thought caused each of us on the project to elevate our awareness of every detail. This is how Richard achieves his design success. I now use this same expression with young intern architects and with moderately experienced architects to get them to focus on the work at hand.

Thank you, Richard, for being a good teacher.

—James Mawson, AIA
Richardson, Tex.

Opportunities lost

I agree wholeheartedly with Robert Campbell's column in the August issue [Critique, page 59]. Yet I fear it's already too late. At this time when architects have had an opportunity to exhibit leadership, they have instead exhibited mankind's worst qualities.

Engineers have conducted notable forensic work, handled the clearing and stabilization of the World Trade Center site, freely expressed their grief, dismay, guilt-ridden feelings of responsibility, and have become the subject of sympathetic articles and television interviews.

By contrast, architects began making declarations about what must be done with the site before the clouds of dust had even come to earth. This has been followed by public squabbling more like gulls fighting over a crust than the noble bickering of princes that many of those involved seem to believe they are engaged in.

Unfortunately, the entire professional cadre of architects will likely suffer from the ghastly insensitivity exhibited initially by those few who lacked the strength to restrain their egos, and it will be alienated from a self-governing population that finds the whiff of sovereignty exhibited in current proceedings to be untrustworthy.

Mr. Campbell is correct in saying that the public would like to hear a common voice of wisdom and experience from architects. Yet this unity and common cause is needed even more by architects themselves. Clients work with people they like and trust, but architecture as a profession has just confirmed—on the most visible, closely watched, and emotionally charged project in the history of our country—that the public's previous inclination to dislike and lack of trust was justified.

No matter how unfair this is to the majority of you, this is what's happened. You may still have a small window of time to do something about it. But do it quickly.

—Karen L. Newcombe
San Francisco

It's better to risk

Mr. Campbell asks for us all just to get along [Critique, August 2002, page 59]. Throw away your idealism and be apart of the group. As I look around, I can't find this fraternal order of "middle-of-the-road architecture."

Are we as architects being asked by Mr. Campbell to stop looking up and outward for new invention? I hope not. As the world looks to America to lead it through these very difficult and emotional times, we must not give in to what many feel is the "common good." Is this a Roarkian mentality? For our profession's sake I hope so, and I hope there are many others like me.

In our office there is a quote by Teddy Roosevelt that tends to come up during trying times: "Far better it is to dare mighty things, to win glorious triumphs, even though checkered by failure, than to take rank with those poor spirits who neither enjoy much nor suffer much, because they live in the gray twilight that knows not victory nor defeat."

I ask Mr. Campbell to dare mighty things and not ask for us as a profession to live in the gray twilight.

—J.A. Remling, AIA
TVS, Atlanta

Architect as advocate

The August article entitled "Limited Contract Agreements" [Practice Matters, page 63], by Satish Rao, looks at an area of practice from the design architect's point of view. It suggests that the design architect be an advocate for the owner. I suggest that many design architects are advocates just for themselves, which requires the owner to employ an independent advocate. (My definition of design architect is a firm that provides design and construction administration services.)

I was a project manager with a major design architect for many years. I kept hearing from owners that design architects were not "sensitive" to their needs. Their contention was that the owner carries the burden of financial risk, not the design architect. The owner's solution was to reduce the services of the design architect during the construction administration phase.

Was it to save money, as contended by the writer? The work has to be done by someone, and the owners felt that it should be done by someone who was sympathetic to their goals. Yes, the construction management industry has flourished for these reasons. But are they filling the gap? Are they qualified to perform work truly belonging to the professional architect? In many cases, they are not.

About 10 years ago, I became an owner's advocate. I discovered that as enlightened architectural firms work in this new environment, they become secure that their designs are being protected by the owner's advocate. Their risks are also reduced. The work of the owner's advocate begins at the design phase through construction. Construction administration by the design architect continues with the knowledge that there is a "sophisticated" owner watching every phase of the development. This method of designing and building allows the design architect to focus on doing what it does best.

—Harold Radin, AIA
Commerce Township, Mich.

Vintage design

Frank Gehry's plans for a new winery [News, September 2002, page 44] are déjà vu all over again. For over 10 years, I have been waiting to experience his vision for a new architecture, like Kahn's, from project to project. But his vision, like Gaudí's, no matter how artful, appears to be a dead end. He has only taught us that serious architecture requires princely budgets and the employment of a new technology that was actually created for mass-produced aircraft, on a one-off building. Gehry has mastered this game; he is the "old surfer dude" of architecture. Wine-filled glass columns are certainly the last straw in a litany of over-the-top work.

Ironically, seven pages later and in the same issue, you report that Steven Holl cannot build a foursquare building at Cornell for reasons that are obviously financial. This juxtaposition only dramatizes the marginalization of much of current architecture, where "art" has supplanted craft. No wonder much of our cities' buildings have become kitsch while academia and the press continue to adulate the realm of the sensuously possible while ignoring common sense. Architecture is a practical, not a fine art.

—James A. Gresham, FAIA
Tucson

The temperature of degrees

The horse really is out of the barn, and I agree with Dean Meunier ["B.Arch.? M.Arch.? What's in a name?," August 2002, page 84] when he says that an M.Arch. degree represents a lot more to the public than a B.Arch. I also agree with him that the B.Arch. already exceeds the requirements of an M.A. or M.S. When I received my B.Arch. from Arizona State University, I had nearly 190 semester hours of credit—about 65 hours more than an M.A. in Business Administration. Oh well, life is not fair.

More importantly, an M.Arch. coincides with the goals of the AIA's Continuing Education program—a demonstrated commitment to competence through the best individual efforts of professional inquiry.

The discussion has gone on for many years about how to build real working bridges between education and practice without the emergence of any meaningful model. As an adjunct professor of architecture at Drexel University, I am somewhat biased to believe that our program may be at the forefront of achieving those bridges through its work-study programs. This is not a new idea. The Department of Architecture has a seven-year program (entirely at night—equivalent to five years full time) and a two-year, full-time day curriculum followed by a four-year evening program (two + four). Both lead to a B.Arch., and both provide a work-study advantage.

Although both programs are broad and rigorous, the Curriculum Committee is constantly seeking ways to improve the skills—and, frankly, the marketability—of the department's students. However, like other schools, there's plenty that would like to be added, but no room. This is one reason that Drexel has recently started an M.Arch. evening program.

Drexel's Department of Architecture has also successfully experimented with case study by simulation—a course of competing mock practices. Working students have access to the resources and advice that their day jobs can provide and are always encouraged by their employers who see the direct benefit of a working relationship with a university.

It has been theorized that the architectural profession should model itself after the medical profession and include a Ph.D., internship, and a residency in its training. The majority of architects can't afford that much education, and not many employers can afford the implied commitments. Perhaps this is the next question to be debated. Meanwhile, the M. Arch. Is certainly becoming more important.

—Steven C. Gatschet, AIA
Philadelphia

Biocentrifugal force

Regarding Nancy Solomon's article on biocentric design [Building Science, September 2002, page 173], I must congratulate you for publishing a truly exceptional, well-

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researched, and informative article—far above the level of stuff we usually get in the journals.
—Fred Stitt, director, San Francisco Institute of Architecture, San Francisco

A troubled region

Mr. Sorkin's critique [Critique, July 2002, page 61] is a plethora of misinformation. Mr. Sorkin refers to the "Haussmanization" of the IDF incursion into Jenin during Operation Defensive Shield. The lasting result of Haussman's work has not been the facilitation of tank movement but rather the Paris that we know today. The operations of the IDF were meant to expel terror cells from Jenin—not to create boulevards.

Sorkin also writes that "nowhere today is the political use of urbanism more glaring than in Jerusalem in the West Bank." When referring to the suicide bombers, "terrorism" would be a more appropriate term than "urbanism." While the bombers have struck repeatedly in the city centers of Jerusalem, Tel Aviv, and Haifa, they have not been loath to attack more rural sites. Small towns such as Hadera and road junctions throughout the country have also been targeted.

To suggest that the Israeli settlements in the West Bank and the Gaza Strip are a way to institute "the more bureaucratic styles of apartheid" is a baseless claim. Israel is a democratic state that is committed to a peaceful political solution of the conflict. One million Israeli Arabs live within Israel as Israeli citizens. Even as the Palestinian violence continues, the Israeli government is continually trying to ease Palestinian hardship, recently issuing approximately 12,000 work permits to allow Palestinians to enter its borders. Mr. Sorkin goes on to claim that the settlements "sitting in their arrogance on the tops of hills … represent an almost medieval style of planning, prompted by aggression and machismo." The true reason behind the situating of Israeli homes on hilltops is to secure their safety. Their fears are not groundless: Amnesty International records 92 attacks and 72 shootings against Israeli civilians living in the West Bank or Gaza from September 2000 through May 31, 2002, and it is a number that is constantly increasing.

The claim that "Israelis pursue simultaneous policies of urban renewal and 'ghettoization'—urban renewal in the form of demolition and devaluation of the original inhabitants and 'ghettoization' not only for the Palestinians but also for the Israelis electively ensconced in the pleasant but beleaguered settlements" is simply ludicrous. Indeed, while all armies are prone to make mistakes, Israel's targeting of high-level terrorists is done in a manner that aims to preserve all innocent lives in the surrounding area.
—Jonathan Schienberg, senior press liaison, Consulate General of Israel in New York

Corrections

In the story about Richard Meier in the September issue [page 100], Buro Happold was the engineering firm that worked on the Bethel Performing Arts Center. In September's Building Science article ["Biocentric Design," sidebar, page 174], a photograph from the Dutch Ministry of Housing and the Environment, by Behnish, Behnish & Partner, appeared incorrectly. In September, in archrecord2 [page 63], the article about Phillip Todd neglected to mention the contributions of several members of the design team. Please go to our Web site and click on archrecord2 for more information. In the August article on architectural education [page 84], former dean John McRae's name was misspelled.

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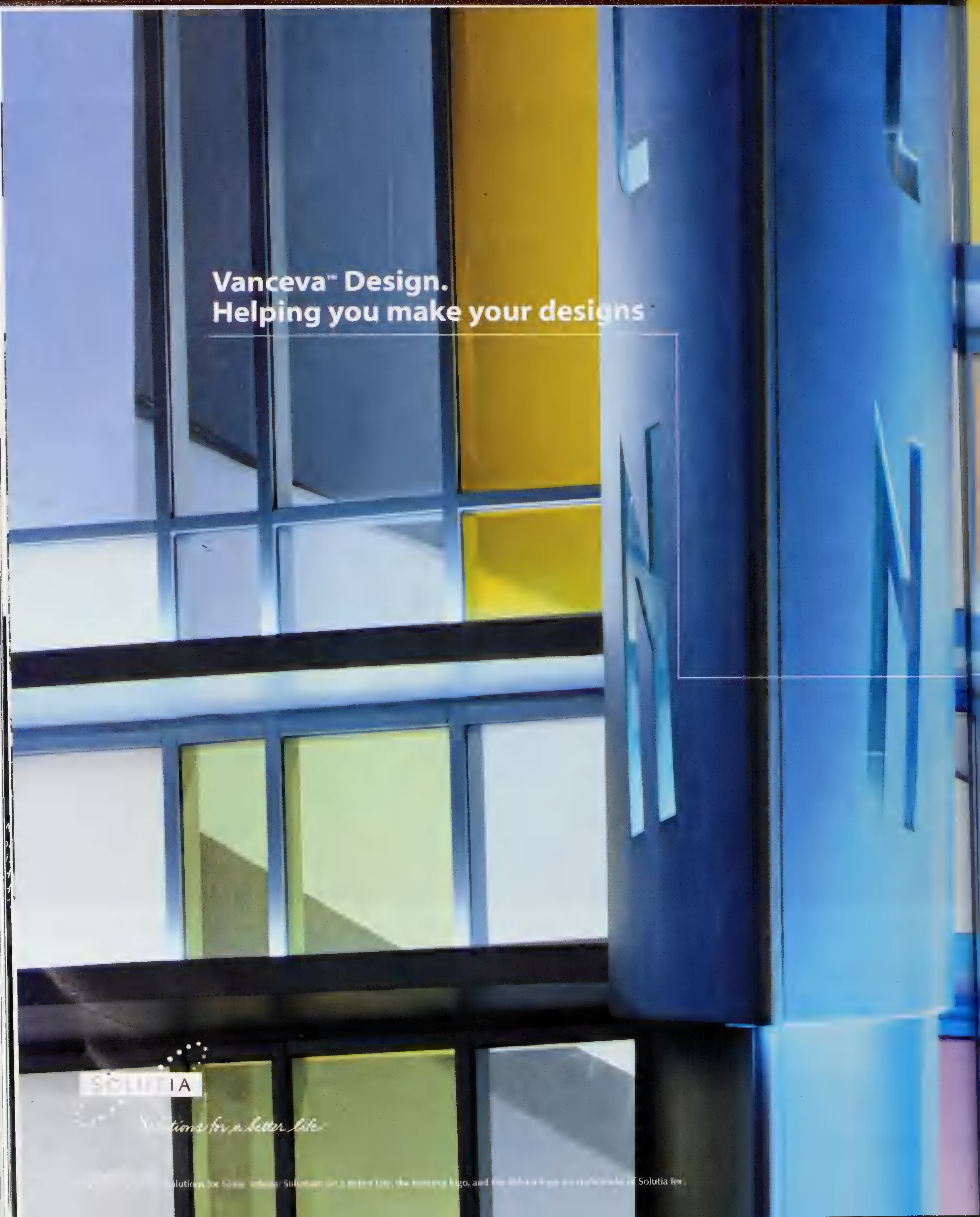
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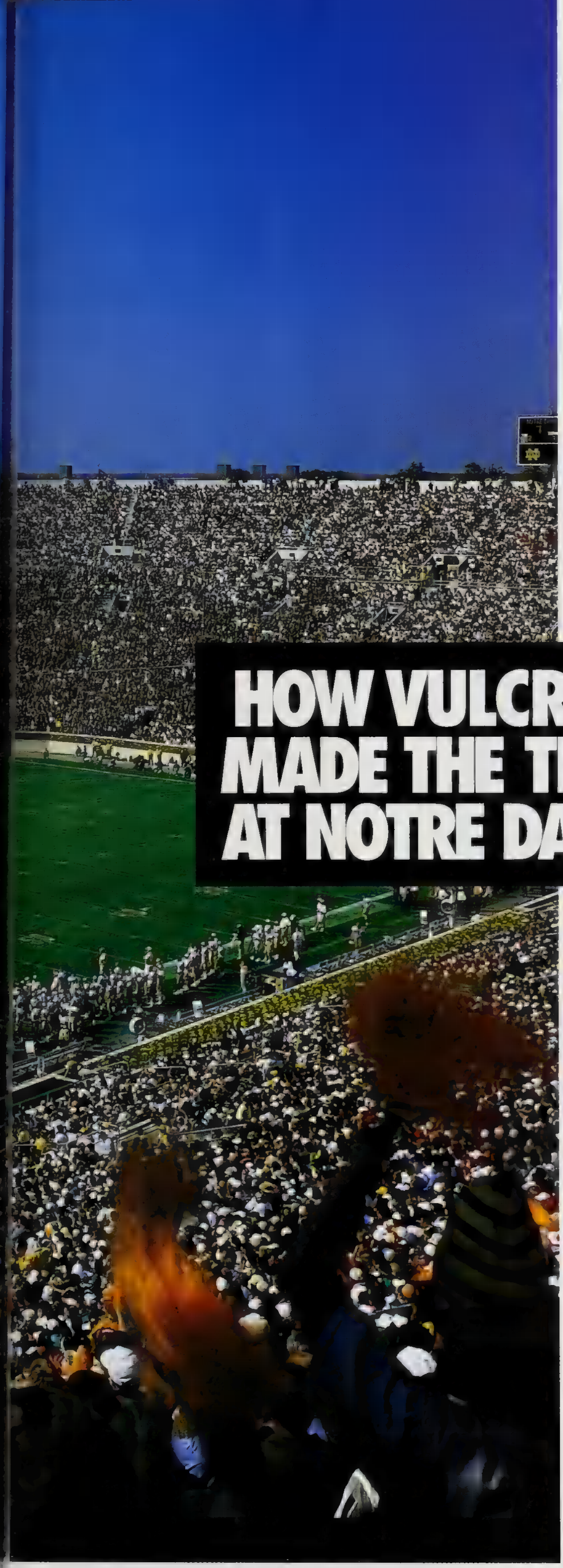

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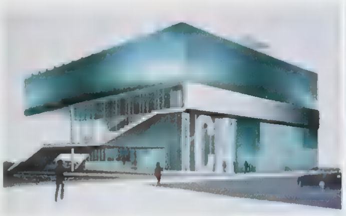
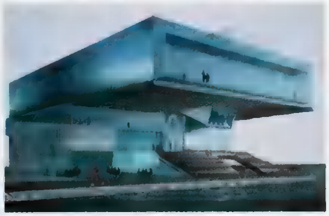
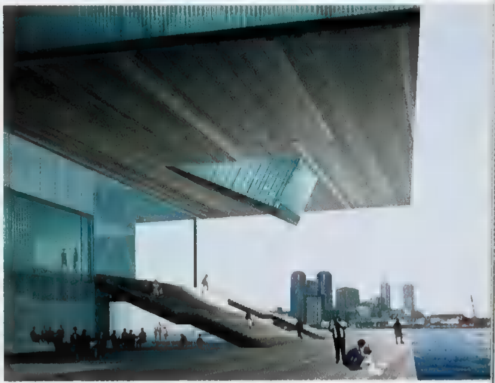
In Boston, Diller + Scofidio design waterfront jewel for ICA







The ICA will include gallery space on the top floor, which cantilevers toward the harbor (right).

Diller + Scofidio, the architecture firm of the New York–based husband-and-wife team of Ricardo Scofidio and Elizabeth Diller, has designed a dynamic addition to the Boston waterfront. The new home for The Institute of Contemporary Art (ICA), which was unveiled in early September, was developed to embrace its urban waterfront location and include a glass-enclosed cantilevered gallery.

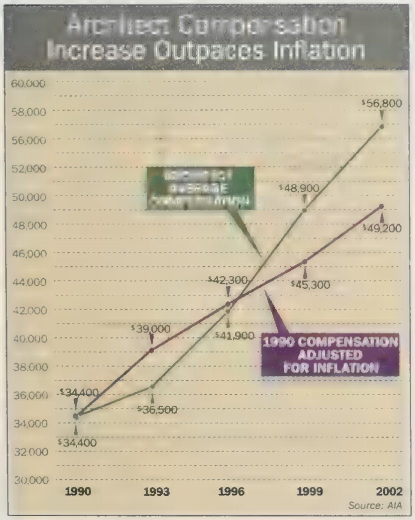
Construction on the 62,000-square-foot museum will likely begin by early 2004, with a projected completion date in 2006. The ICA is planned for the waterfront cove of Boston's Fan Pier development, proposed by Chicago's Nicholas J. Pritzker, which will include up to eight other buildings with a mix of office, retail, and residential uses.

Diller + Scofidio aimed for a museum solution that was "elegant and simple in terms of design, built with an economy of means," Diller told RECORD. They intend the highly transparent four-story building to be engaging, with references to the outside on all four sides. "It's a building of many fronts," Diller says. "It's a metaphorically leaky building that is permeable in many ways."

A harbor walk will wrap the museum on two sides. An outdoor grandstand, which will appear as a continuation of a two-story-tall theater that is inside the museum, will be sheltered by the building's cantilever. The museum's 18,000 square feet of exhibition space will reside on the uppermost floor, which cantilevers 75 feet toward the water.

An exhibition about the ICA design process, *Building A Vision: Diller + Scofidio in Boston*, will be held at the ICA from January 22 to April 27, 2003. An exhibition of Diller + Scofidio's body of work, *Scanning: The Aberrant Architecture of Diller + Scofidio*, will be at the Whitney Museum of American Art in New York City, March 1 to July 1, 2003.
John E. Czarnecki, Assoc. AIA

AIA survey shows architect compensation increases continue to outpace inflation



The average compensation of registered architects, interns, and graduates of architecture programs combined has outpaced inflation.

Compensation at architecture firms has increased at a rate that has outpaced inflation in recent years, according to the American Institute of Architects (AIA), which releases its 2002 AIA Compensation Survey this month. The survey also reveals that, in general, the larger the firm is, the higher the compensation will be for all positions.

According to the survey, "The average compensation for architecture positions as of early 2002 was 15 percent above what it would be if it had merely kept pace with inflation since 1990." In fact, architect compensation increases lagged behind inflation as late as 1996.

Architecture staff compensation increased from 1999 to 2002 on average 2.3 percent—at a pace that is only slightly less than the 3 percent increase during the previous three-year period of 1996 to 1999, when the amount of construction activity was rapidly expanding. "I think we were not expecting the percentage increase from 1999 to 2002 to be as high as it was," says Pradeep Dalal, AIA director for economics and market research.

The AIA Economics and Market Research Group administered the survey online between March 26 and May 24, 2002, to a sample of approximately 9,000 AIA member-owned firms. Architecture positions included in the average are registered architects, nonregistered graduates of architecture programs, and graduates currently working in internship programs. Compensation is broadly defined to include salary, as well as nonguaranteed overtime, bonuses, profit sharing, and other incentive compensation. Principals and partners earn, on average, more than 25 percent of compensation from nonguaranteed sources, while registered and nonregistered graduate architecture staff earn 10 percent of their compensation from nonguaranteed sources.

All architecture positions averaged almost 5.5 percent compensation increases annually

OFF THE RECORD

Philippe Starck has designed a 289-unit residential tower, called ICON, for Miami Beach, Florida. Construction on Starck's first American residential project will begin in 2003, with completion expected in 2005.

A Holocaust Memorial designed by New York architect Wendy Evans Joseph opened in Salt Lake City on September 12. Joseph was one of the designers for the U.S. Holocaust Memorial Museum when she was with Pei Cobb Freed & Partners.

More than 2,500 people have registered to submit a design in the competition for a memorial to victims of the September 11, 2001, terrorist attack on the Pentagon. A winner will be selected by the end of the year.

Los Angeles–based architect Michael Maltzan Architects was chosen in a competition to design a new $27 million Sonoma County Museum in Santa Rosa, California. The four finalists included Steven Holl Architects, Greg Lynn FORM, and Kuth/Ranieri Architects.

Renzo Piano, Hon. FAIA, has won the International Union of Architects 2002 Gold Medal. The Japan Art Association will award its 2002 Praemium Imperiale award for architecture to Norman Foster in an October 23 ceremony in Tokyo.

New Orleans–based firm Eskew + has added five new partners and is now called Eskew+Dumez+Ripple.

Six new towers are being planned for London's Canary Wharf, three each by Cesar Pelli & Associates and the Richard Rogers Partnership.

Metro, the Washington, D.C.–area transit authority has unveiled a 10-year, $12.2 billion plan to provide additional transportation service via light-rail trolleys and bus rapid transit.

(continued from previous page)

between 1999 and 2001, while the increases for professional, specialty, and technical positions averaged 3.9 percent per year in the same period, according to U.S. Department of Labor data.

Compensation for principals and partners was about 50 percent higher at firms with 50 or more employees than at smaller firms.

Senior managers, project managers, and department heads combined had a 20.8 percent increase in compensation from 1996 to 1999 and a 14.5 percent increase from 1999 to 2002. Intern compensation increased by 12.4 percent in the past three years, while the increase was about 14 percent for other architecture positions. The survey notes: "One explanation for this widening gap between increases for interns and that for architects is that in 1999–2002 there was a demand for architects with five to 10 years' experience, many of whom had left the profession during the early 1990s."

The compensation gap between architecture staff and other design professionals, such as engineers, interior designers, landscape architects, and urban planners, is narrowing. According to the survey, "At present, average compensation for architecture staff is just 1 to 2 percent below the average compensation for other design professionals."

Higher billings by large firms does translate into higher pay. The survey found that architecture staff compensation is about 5 percent higher at larger firms than at smaller firms, and about 5 to 10 percent higher at larger firms than at mid-size firms. Compensation at firms in metropolitan areas is about 10 percent higher than for comparable positions at firms outside metropolitan areas.

Benefits account for about 20 percent of the average compensation in a firm. Ninety-two percent of firms offer medical insurance coverage to their employees, while 47 percent offer dental insurance, and only 17 percent offer paid maternity leave (ranging from 8 percent for firms of fewer than five people to 53 percent for firms of 250 or more).

The majority of firms, 66 percent, pay full AIA member dues for their eligible employees.

The complete 2002 AIA Compensation Survey will be available for purchase, either in print or as a PDF, in late October for $140 for AIA members and $200 for nonmembers. Summaries of the results from each of the nine AIA regions can be bought as PDFs for $45 per region. Purchase online at www.aia.org or call 800/242-3837 (option 4). *J.E.C.*

About 40% of Firms Pay Registration Exam Fee

(NUMBER OF EMPLOYEES)

	FEWER THAN 5	5 TO 9	10 TO 19	20 TO 49	50 TO 99	100 TO 249	250 OR MORE	ALL FIRMS
PAID LEAVE FOR EXAM	38%	55%	59%	65%	58%	67%	74%	56%
REGISTRATION EXAM FEE	24%	39%	50%	48%	39%	64%	63%	42%
PREPARATORY CLASSES	11%	18%	23%	21%	19%	27%	42%	19%
OTHER	6%	8%	11%	17%	21%	25%	16%	12%

Average Compensation for Architecture Firm Staff

(NUMBER OF EMPLOYEES)

	FEWER THAN 5	5 TO 9	10 TO 19	20 TO 49	50 TO 99	100 TO 249	250 OR MORE	ALL FIRMS
DEPARTMENT HEAD/ SENIOR MANAGER	$72,400	$78,000	$83,900	$84,300	$96,000	$96,100	$101,800	$87,600
PROJECT MANAGER	61,000	58,000	63,300	69,200	74,900	71,900	77,900	69,700
SENIOR ARCHITECT/DESIGNER	56,100	55,100	60,400	63,100	68,900	66,700	72,200	65,600
ARCHITECT/DESIGNER III	48,500	47,700	52,400	53,500	58,000	55,500	61,300	55,400
ARCHITECT/DESIGNER II	42,400	44,600	47,700	47,600	51,500	50,400	50,900	49,100
ARCHITECT/DESIGNER I	37,200	37,900	39,900	40,700	45,400	41,600	43,800	41,600
INTERN III	36,600	36,700	37,300	39,500	39,300	38,700	45,200	39,200
INTERN II	29,300	32,400	34,000	34,500	33,200	35,400	36,500	34,000
INTERN I	28,400	28,500	30,000	31,700	31,300	30,700	27,700	30,300

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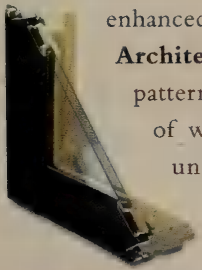

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SPECIAL REPORT

New York architecture critics select favorite designers to develop plans for WTC site

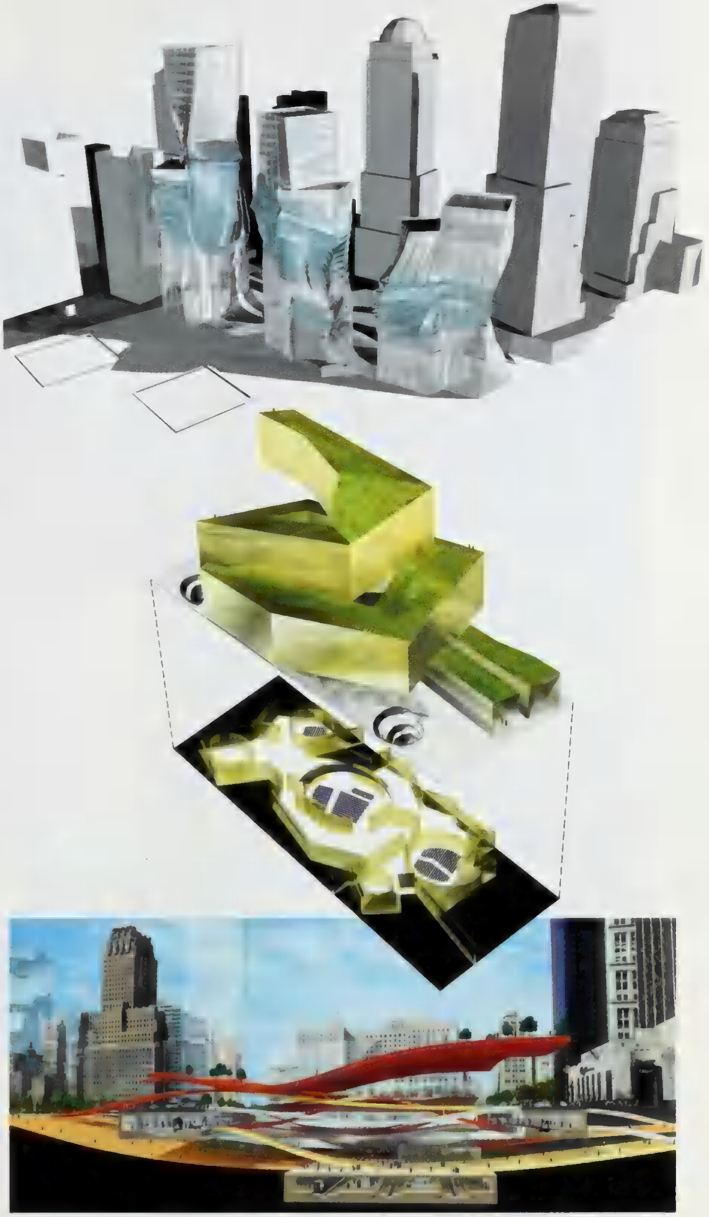
The New York Times architecture critic Herbert Muschamp invited a select group of well-known architects to develop individual building plans for the World Trade Center site and surrounding areas. The designs appeared in *The New York Times Magazine* on September 8. Although created without knowing what the ultimate program will be for the site, some evocative ideas and building forms emerged from the exercise.

Muschamp's group of architects included Steven Holl, Rafael Viñoly, Richard Meier, Peter Eisenman, Zaha Hadid, Henry Cobb and Guy Nordenson, David Rockwell, Alexander Gorlin, Lindy Roy, Architecture Research Office, Frederick Schwartz/FACE, Rem Koolhaas/OMA, Charles Gwathmey/Gwathmey Siegel, TEN Arquitectos, and Koning/Eizenberg. Maya Lin also developed memorial sketches. See the proposals at www.nytimes.com/magazine.

The New York Observer, in its September 19 issue, reported on Muschamp's efforts: "Several sources familiar with the *Times* project questioned whether Mr. Muschamp's presence as organizer puts him in a precarious role—a critic now serving as overseer of people whose work he also covers and judges." Does this help or hurt the chances of those same architects to ultimately be selected to design a building that will be built at the WTC site?

The *Observer* also noted that "following contentious meetings with Mr. Muschamp, some members of the *Times* design panel have wanted to withdraw altogether."

Simultaneously, *New York* magazine architecture critic Joseph Giovannini also invited proposals from seven architects—Hadid, Eisenman, Thom Mayne of Morphosis, William Pedersen of Kohn Pedersen Fox Associates, Wolf Prix, Carlos Zapata, and Lebbeus Woods—that appeared in the September 16 issueof *New York*. Visit www.nymetro.com/wtcdesigns to see their schemes. *J.E.C.*



Proposals in *The New York Times* included offices by Peter Eisenman (top), a museum and theater by Steven Holl (middle), and a transit hub by Rafael Viñoly (bottom).

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SPECIAL REPORT

Winter Garden $50 million reconstruction completed one year after 9/11 destruction

The reconstructed Winter Garden includes a glass wall (above) that faces the World Trade Center site, a new lobby (left), and new palm trees and marble flooring in the atrium (below).

On September 17, one year after it sustained considerable damage from the terrorist attacks, the World Financial Center's Winter Garden atrium was officially reopened to the public. In separate ceremonies earlier in the month, invited guests visited the Winter Garden, and President Bush addressed world leaders in the space.

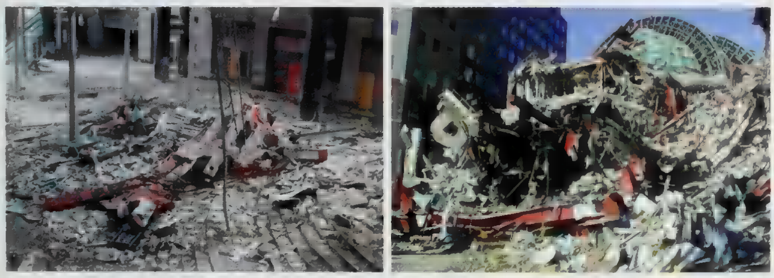
The reopening is remarkable considering Thornton-Tomasetti Engineers, the original structural consultant, had initially deemed the glass-and-steel structure unsalvageable due to lateral instability.

Owned and managed by Brookfield Properties, the new Winter Garden is a lesson in contrasts from Cesar Pelli's original design, which was completed in 1988. The east facade, which had been destroyed with the collapse of the north bridge that had linked the Winter Garden to the World Trade Center, is now composed of a Pilkington Planar structural-glass system, measuring 110 feet wide by 60 feet tall. A ground-level lobby, which was not a part of the building before the attack, now faces the building's east facade. Additionally, a semicircular wall of glass ribs replaces former storefronts. Illuminated from behind, the industrial structural glass draws users into the lobby and toward the Winter Garden without deploying graphic signage.

Other components of the original design remain, including the grand stairway. Directly facing the site of the World Trade Center, visitors now use the stairway landing as a viewing platform.

The $50 million project was completed on an exceptionally accelerated construction schedule, with Turner Construction as construction manager and general contractor. Because of the fast track, Rafael Pelli, principal with Cesar Pelli & Associates, said "very little" of the redesign was changed over the course of construction: "As soon as a concept was approved by the owner, we'd be put in direct communication with the subcontractor."

To rebuild the roof structure, an exterior hoist-and-trolley system was implemented that allowed the work to be completed in less than five months rather than 2 years, which is how long it originally took to construct. *David Sokol*



On September 11, 2001, the WTC towers smashed into the Winter Garden's east facade.

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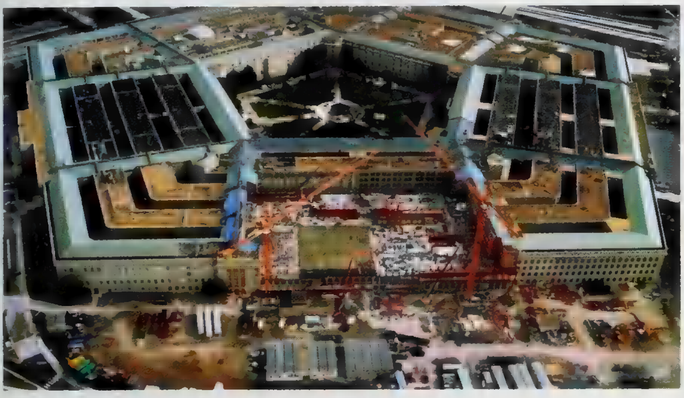
SPECIAL REPORT



The Pentagon as seen earlier this year (below left) and after the outermost ring was reconstructed (top and below right).

Pentagon's $501 million Phoenix Project reconstruction emerges from the 9/11 attack

A stronger and safer Pentagon has emerged lightning-fast from the cinders of the September 11, 2001, terrorist attack.

Employees moved back into the outermost E ring the week of September 11. Work on the inner D and C rings will conclude by year's end, says Rachel Decker, a spokesperson for the Pentagon's $501 million Phoenix Project reconstruction program, named after the mythical bird that arose from ashes.

Workers sometimes toiled in dual 10-hour shifts to reconstruct the 400,000-square-foot segment that was destroyed. Another 1.6 million square feet of the Pentagon was damaged by water, smoke, and fire, but not destroyed.

"That's an amazing pace of work," says Cris Fromboluti, project director for Hellmuth, Obata + Kassabaum (HOK). "You can't even do a house in 10 months. Normally a project of this type would take three to four years."

Construction began November 19, 2001, the same day the 24-hour-a-day demolition project ended. About 56,000 tons of debris were hauled away to a landfill.

St. Louis–based HOK and Baltimore-based RTKL Associates worked side by side to speed design and construction along. Washington, D.C.–based KCE Structural Engineers helped coordinate Project Phoenix and provided structural engineering. London-based AMEC Construction Management was the general contractor.

"Everybody just worked together to get the work done to meet the goals," said RTKL's project manager Ridgely Dixon. "There were never any turf or scope issues."

HOK's responsibilities included design of the facade and tenant build-outs, and RTKL worked on building-core elements such as the stairwells and the roof. Security, safety, and historic preservation were the chief design concerns.

Exterior walls were rebuilt using heavily reinforced concrete. Additional interior corridors were added, with reinforced-concrete block surrounding those hallways as well as the new stairwells and elevator shafts. The same type of 1,600-pound, blast-resistant windows, which cost $10,000 each, were installed that had been in place as part of the Pentagon's ongoing renovation program.

Some of the original Pentagon facade limestone was salvaged, and nearly 4,000 additional slabs were harvested from the same Indiana quarry that provided the original stone. *Barbara J. Saffir*

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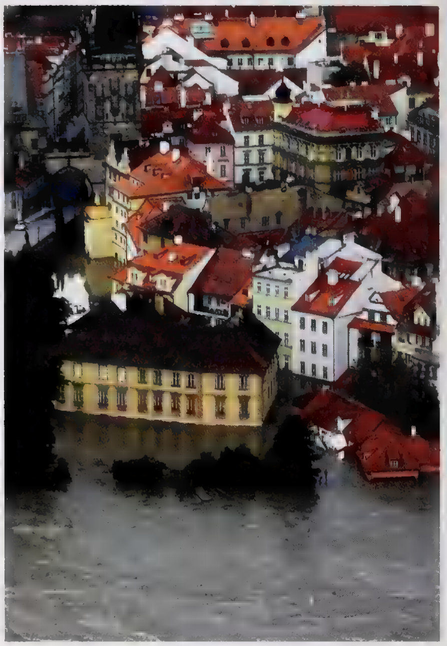
Floods damage Czech and German structures

The damage to important works of architecture caused by the floods that ravaged central Europe last August, though devastating, was much less so than it might have been.

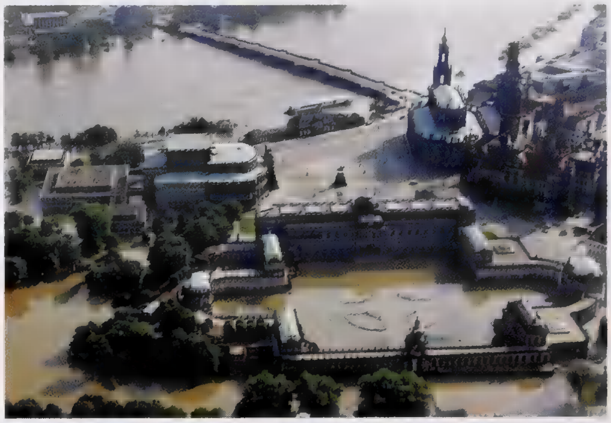
Cost estimates for the damage in Prague approach $350 million, and $2 to $3 billion for the Czech Republic as a whole. The greatest architectural loss was at the National Technical Museum in Prague, where architectural archives were destroyed in flooded basement storerooms. The collection included original drawings, models, and papers of architects from Prague's "Functionalist" and "Cubist" movements in the early 20th century, including Jan Kotera, Josef Plecnik, Pavel Janák, Josef Gocár, and Josef Chochol, 90 percent of which are now considered lost.

Prague's historic Old Town was largely saved by an ingenious removable barrier that has permanent 20-foot-deep anchor slots spaced along the Vtlava River. The anchor slots receive vertical H-section channels that support gasketed aluminum "stop blocks" that can rise up to 9 feet.


Prague's Malá Strana district, as photographed on August 14, flooded by the Vltava River.

Backflow from old sewer systems inundated many area basements, however. Hard hit were the 13th-century Starnova Synagogue, the oldest in Europe, the 16th-century Pinka Synagogue, the National Theater, and the Rudolfinum concert hall. Areas without the barrier suffered far greater damage, including the historic Malá Strana district, Kampa Island, and the Karlin neighborhood. The Kampa Art Museum, which opened last June in a former mill, was flooded as high as its second floor. Elsewhere in the country, the 13th-century village of Cesky Krumlov, a UNESCO World Cultural Heritage site, was swept twice by floods.

In Germany, the historic center of Dresden was inundated by overflow from the Elbe River, but damage was largely limited to flooded basements and mechanical systems. At the Opera, built by Gottfried Semper in 1871 and rebuilt after World War II, basements filled with 30 feet of water, destroying mechanical systems, stage machinery, costumes, sets, and musical instruments. Other major buildings affected include the Zwinger Castle and Albertinum museums, the State and Palace theaters, the royal palace, and the cathedral. The damage to these structures alone totals more than $60 million. The central train station suffered $42 million in damage, postponing its renovation by Norman Foster.


Dresden's Zwinger Castle, shown on August 16, had a flooded courtyard.

One of the bright points, though, was the survival of Dresden's new Jewish Synagogue [RECORD, June 2002, page 102]. As river water seeped into its basement, firefighters from Nuremberg worked around the clock for three days to pump water out. Down river, similarly heroic efforts to defend flooded dykes saved the original Bauhaus buildings in Dessau and the historic city of Wittenberg, home of Martin Luther. *David Cohn*

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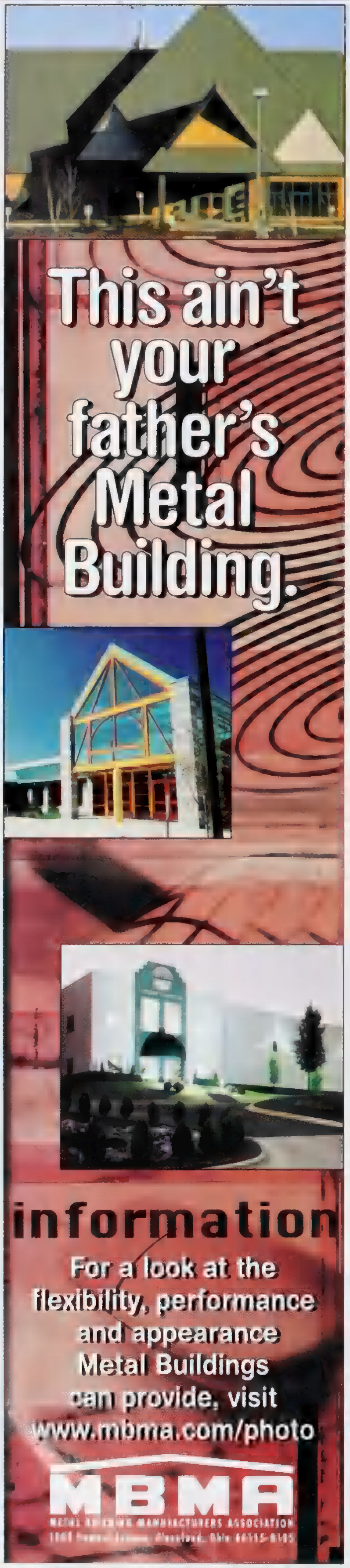
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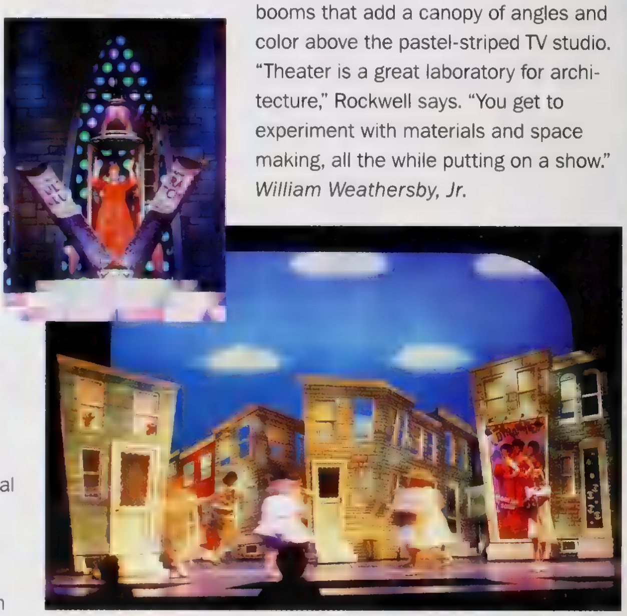
Rockwell interprets 1960s Baltimore for *Hairspray* set

"Theatrical" is a word often used to describe the restaurant and hotel interiors designed by architect David Rockwell. Having recently designed the sets for his second Broadway show, the new hit *Hairspray*, Rockwell is ironically winning raves for his theater work with descriptions like "architectural."

"I've always considered the term 'theatrical' in its broadest sense," he says. "It doesn't imply two-dimensionality; rather, it creates a narrative that sparks an engaging experience."

Based on the John Waters film and set in Baltimore circa 1962, *Hairspray* tells the Cinderella-like tale of teenager Tracy Turnblad and her quest to win friends and a slot on the local TV dance show, all the while improving race relations at the dawn of the swinging '60s.

After touring Baltimore with Waters, Rockwell settled on a look he calls "everyday Baroque." With a skewed, larger-than-life perspective, the sets feature row houses with Formstone cladding, a wall inspired by a craft kit of Lite-Brite pegs, and a latticework of microphone booms that add a canopy of angles and color above the pastel-striped TV studio. "Theater is a great laboratory for architecture," Rockwell says. "You get to experiment with materials and space making, all the while putting on a show." *William Weathersby, Jr.*



From Lite-Brite walls (top) to Formstone row houses (above), the sets for *Hairspray* capture the look of dance-party Americana.

PHOTOGRAPHY: © ROCKWELL GROUP AND PAUL KOLNIK (INSET); ROCKWELL GROUP AND DAVID JOSEPH (RIGHT)

Report finds that school buildings are increasingly "sick"

As buildings became more energy efficient in the 1970s and 1980s, they also retained internal airborne contaminants like mold and volatile organic compounds. Cases of so-called "sick-building syndrome" have been on the rise as a result. Although children typically have a lower threshold of tolerance for such pollutants, the Falls Church, Virginia–based Center for Health, Environment and Justice reports that there are no federal health design standards that address school construction. In response, the organization, through its Child Proofing Our Communities campaign, published a report in August entitled "Creating Safe Learning Zones: The ABCs of Healthy Schools" to educate people to detect and resolve school contamination, as well as to prevent it in new construction.

Campaign coordinator Paul Ruther explains that to build healthier schools, the report proposes that "different risk assessments, with much lower levels of exposure" be applied to environmental testing and to design standards. "The ABCs of Healthy Schools" stresses that many common construction materials are toxic. It states, "While the threats from building materials such as lead and asbestos are subsiding, mold, vinyl, and toxic fumes from carpeting present a new generation of hazards." According to the document, other potential dangers include formaldehyde-treated particleboard and arsenic-treated playground structures. Recommended strategies such as installing large operable windows to improve natural ventilation and daylighting, as well as HVAC systems that quickly flush air from laboratory and art spaces and that can be maintained to prevent mold, broaches the "contractual relationship between the owner, architect, and engineer," says the report's consulting architect, Barbra Batshalom, executive director of Cambridge, Massachusetts–based The Green Roundtable. "It really requires extreme discipline and a lot of coordination up front."

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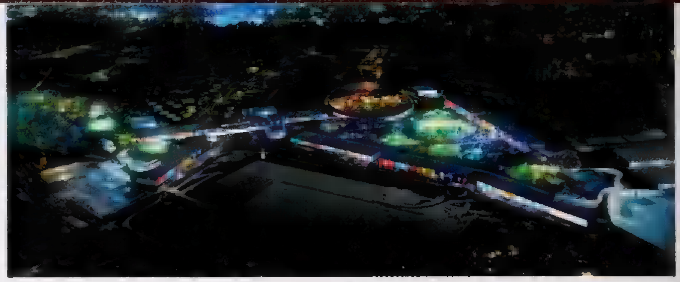
French government cancels Expo 2004 after Tschumi develops schematic plans

Citing budget constraints as well as a lack of interest from invited participants, French prime minister Jean-Pierre Raffarin cancelled Expo 2004 on August 8. The $400 million international exposition was to take place in summer 2004 in Seine-Saint-Denis, just north of Paris.

The cancellation pulls the plug on Bernard Tschumi, who was hired as the exposition's chief architect in September 2001 to create its master plan as well as design guidelines for individual national pavilions. The theme of Expo 2004 was "Images"—or, more exactly, the impact of visual imagery on culture, the economy, and society in different countries. The exhibition aimed to examine this, as well as the globalization role of media and advertising technology.

Tschumi says he regrets the missed opportunity "to discuss the multiplicity of images, and the fact that no nation can claim to own a certain type of image."



Tschumi's plan for the 60-acre Expo 2004 would have emphasized linearity.

The New York and Paris–based Swiss-French architect, who will step down as dean at Columbia University in spring 2003, had just completed the schematic design for a 60,000-person meeting hall for the exposition when he learned of the show's demise.

Tschumi explains that his design for the 60-acre site would have emphasized linearity: "What we tried to do was to organize all the pavilions around a sequence of spaces so that, instead of having the pavilions as individual objects, they would literally define a common space—an elongated plaza."

Tschumi's design work for Expo 2004 will be in a book entitled *Virtual: Expo 2004*, to be published by Scala by the end of this year.

Raffarin's decision to abandon Expo 2004 was one of his first upon taking office. With Expo 2004 shuttered, architects and design enthusiasts must wait until 2005 for a show of similar scope, when Aichi, Japan, hosts the World Exposition. *D.S.*

Individual country pavilions (left) would have graphics on mesh, and an entrance scrim (right) would welcome visitors.

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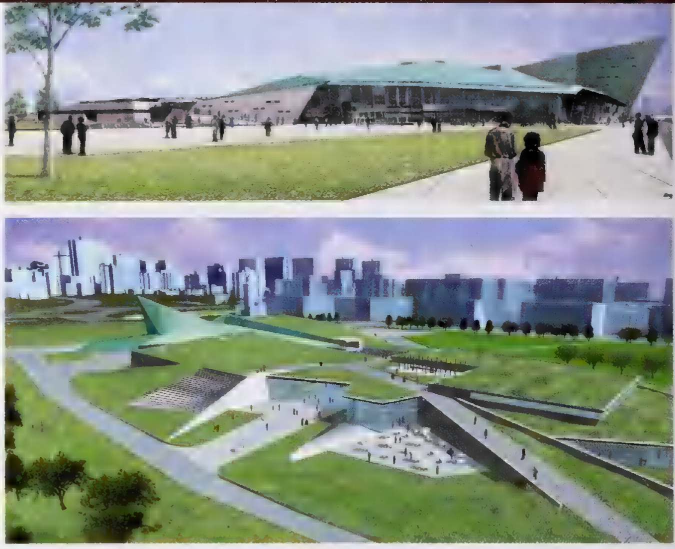
After a long wait, construction to begin on Moriyama's Canadian War Museum in Ottawa



The Canadian War Museum in Ottawa is designed to emerge from the landscape, recalling World War I battlefields and World War II coastal defenses.

After more than two decades of often raucous debate and more than one stillborn design, construction on a new Canadian War Museum in Ottawa will begin in November. On August 7, Sheila Copps, Canada's Minister for Culture, unveiled a final design for the museum by Toronto's Moriyama & Teshima Architects in joint venture with Ottawa's Griffiths Rankin Cook Architects. The $70 million museum will be built on Lebreton Flats, a vacant meadow between the Ottawa River and the western bluffs of Parliament Hill.

This was the second design unveiling for the museum this year. In May, Moriyama & Teshima had presented three distinct design options. When these met with studied indifference from officials, the media, veterans, and the public, the museum diplomatically asked for "refinements."

Chief design architect Raymond Moriyama developed this version to read powerfully as a bruised, natural and urban landscape in the process of regeneration. The 52,700-square-foot building emerges from the riverside landscape as an elongated, multilevel ramp topped by a roof covered with grass mounds that are intended to recall World War I battlefields. The major exhibition spaces have a tall, glass-enclosed east facade facing Parliament Hill.

Along the south side of the building, an irregular, canted wall of poured-in-place concrete recalls World War II coastal defenses. A ramping path that cleaves this wall ascends to a trenchlike cut opening out to the landscaped roof and then descending to merge with the riverbank.

A sharp, 80-foot hollow shard, clad in copper and punched with window openings that spell out *regeneration* in Morse code, marks the museum's axis with Parliament Hill's iconic Peace Tower. It also evokes the stark, blasted landscapes and ruins seen in many of the 14,000 works in the museum's Beaverbrook Collection of War Art.

With funding in place, the museum is expected to open by fall 2005. *Rhys Phillips*

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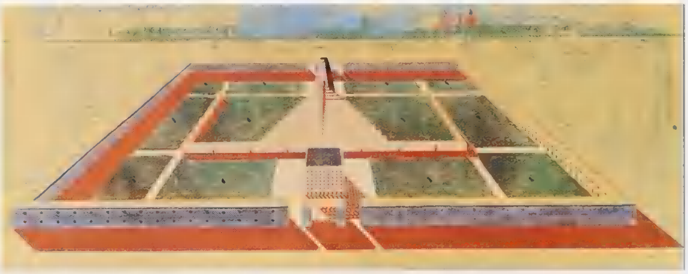


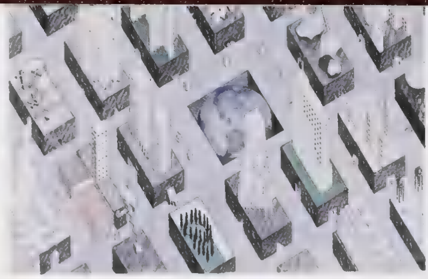
Visionary architectural drawings from the 1960s and 1970s in MoMA exhibition

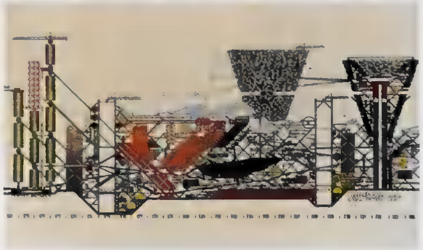
The Museum of Modern Art (MoMA) will present a selection of 173 architectural drawings, mostly from the 1960s and 1970s—a portion of a gift of 205 drawings from the Howard Gilman Foundation—in the exhibition *The Changing of the Avant-Garde: Visionary Architectural Drawings from the Howard Gilman Collection*. On view at the museum's temporary home in Queens, New York, October 24, 2002, through January 6, 2003, the show includes drawings by Peter Cook of Archigram, Raimund Abraham, Arata Isozaki, and Rem Koolhaas.

The core of the collection documents a period of architectural history that marks the beginnings of the transition from the late stages of Modernism into what would eventually be described as Postmodernism. Gilman collected these drawings from 1976 to 1980 under the guidance of Pierre Apraxine, who curates the collection for the Gilman Foundation.

While Postmodernism came to mean a revival of traditional architectural styles, as Terence Riley, MoMA's curator of architecture and design, explains in his introduction to the exhibition's catalog, the group of architects associated with the collection responded to history in subtler ways. Gaetano Pesce's Church of Solitude "appears as a literal excavation of urban archaeology," Riley writes. Other drawings include Koolhaas's axonometric rendering of an idealized New York City, *City of the Captive Globe*, as well as Aldo Rossi's *Cemetery of San Cataldo*, Peter Cook's *Plug-In City: Maximum Pressure Area*, and Massimo Scolari's *Addio Melampo.*

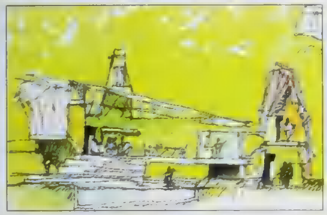
Although the early Postmodernists developed in widely divergent directions, their reactions to the ahistorical Modernist movement defined them for a time. This exhibition presents a snapshot of that moment. *Kevin Lerner*





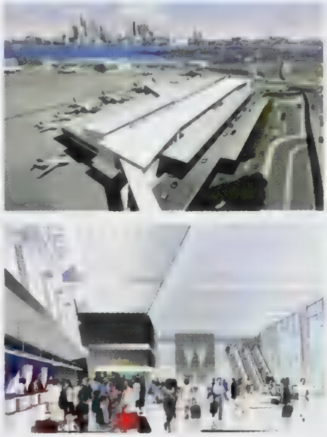
Aldo Rossi and Gianni Braghieri's *Cemetery of San Cataldo*, 1971 (left); Rem Koolhaas's *The City of the Captive Globe*, 1972 (top); and Peter Cook's *Plug-In City*, 1964 (above).

Sagaponac homes go up Construction has finally begun on nine of the houses at Sagaponac being built by developer Coco Brown, who selected different architects to design each of the nearly 40 homes [RECORD, April 2001, page 27] that are planned for the Hamptons site on Long Island, New York. The nine projects under way, which should be complete in a year, were designed by Marwan Al-Sayad, of Phoenix; Shigeru Ban, of Tokyo; Henry Cobb, Richard Gluckman, and Gisue and Mojgan Hariri, all of New York; Steven Kanner, of Los Angeles; the late Samuel Mockbee, of Canton, Mississippi; Lindy Roy, and Annabelle Selldorf, both of New York. Brown says he is personally interested in the possibility of moving into the home designed by Mockbee (bottom left), who died in 2001. "I've imagined living in that house—it suits my temperament, I guess," Brown says. The first nine homes are being built before they are sold to individual homeowners, which Brown expects to occur by spring. All of the homes will be built, he says, despite the slowed economy.



Mockbee's design for a home at Sagaponac is being built.

Survey says security is a higher priority for many architects According to a survey conducted by the American Institute of Architects (AIA), 55 percent of AIA architects say their clients have made building security a higher priority in the past year. Forty-six percent say at least one client has ordered implementation of security features in existing buildings or in a building design. Forty-eight percent said yes when asked, "As a result of this heightened security awareness, do you think buildings are better protected against terrorist attacks than they were a year ago?" Fifty-seven percent said no when asked, "Have the September 11 terrorist attacks affected how you approach your work, your clients, your staff?" The survey of 400 AIA members was conducted from August 19 to September 3.



HOK Aviation has designed Delta's Terminal A at Boston's Logan Airport.

HOK completes design for Terminal A at Boston's Logan Airport HOK Aviation, the airport design specialists at Hellmuth, Obata + Kassabaum (HOK), has completed the design for Delta Air Lines' Terminal A at Boston's Logan International Airport. Comprising two buildings, it will include 18 gates, with seven gates for regional planes, in primarily two structures: a 362,000-square-foot main terminal and a 284,000-square-foot satellite concourse. HOK expects to obtain LEED certification for the terminal, which will be the first "green" building at the airport, with recycled products specified to the extent possible. The $395 million terminal is scheduled to open in 2005. HOK has opened an office in downtown Boston for this project.

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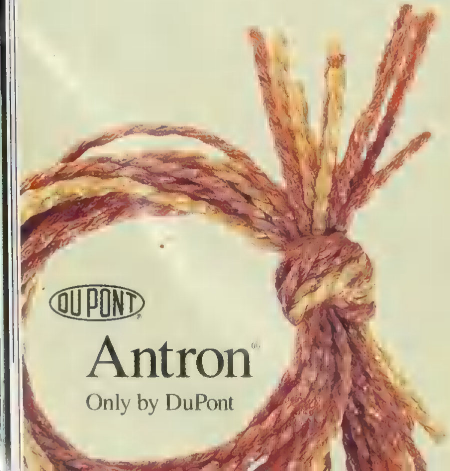

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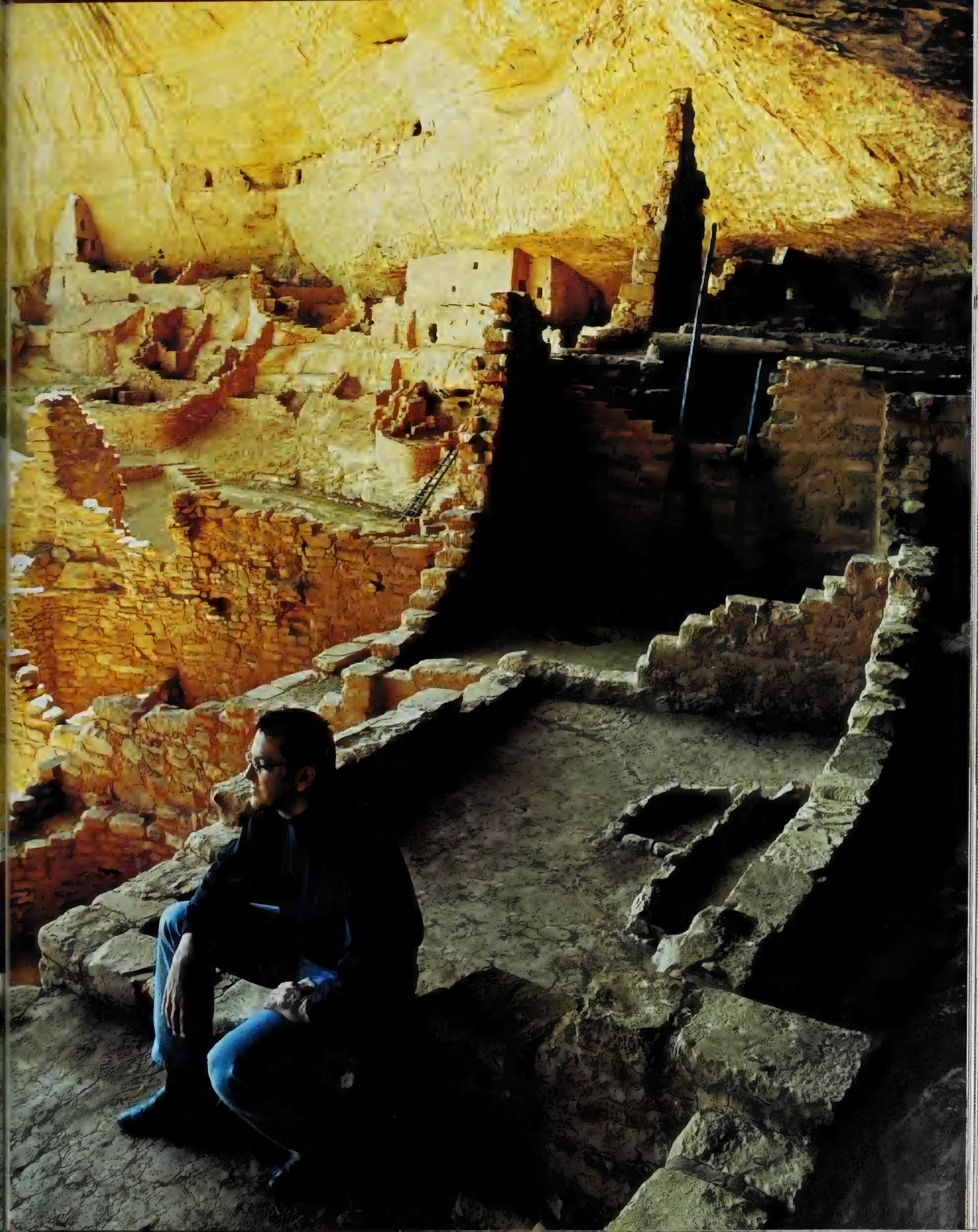

Dates & Events

New & Upcoming Exhibitions

Herzog & de Meuron: Archaeology of the Mind
Montreal, Canada
October 23, 2002–April 6, 2003
"Since architecture itself cannot be exhibited, we are forever compelled to find substitutes for it," said Jacques Herzog regarding this exhibition (which he and Pierre de Meuron curated in collaboration with Philip Ursprung). The substitutes on display are plentiful and plenty strange: an assortment of models, photographs, toys, fossils, rocks—any object that has served as a source of information for the architects. Bridging the archaeological, the psychological, and the architectural, the exhibition describes the architect's obsession with the historical object and its modern evaluation. At the Canadian Centre for Architecture. Call 514/939-7000 or visit www.cca.qc.ca for more information.

New Hotels for Global Nomads
New York City
October 29, 2002–March 2, 2003
With a title that sounds like a Koolhaas co-option, the exhibition all about hotels describes them as symbols of contemporary leisure. With a focus on the opulent, Vegas-style hotels with gimmicks, attractions, and new domestic technologies, the show places these heavily designed spaces in historical context. Decadent hotel design actually dates back to 1829, in Boston. For more historical information, call the Cooper-Hewitt National Design Museum at 212/849-8400.

Out of the Ordinary: The Architecture and Design of Robert Venturi, Denise Scott Brown & Associates
Pittsburgh
November 8, 2002–February 2, 2003
The first retrospective of the firm's work displays architecture, urban planning, and decorative arts from the earliest commission in the late 1950s to the recent international projects. Most architects know what they've said, or written; less than half of these could name five of their projects. At the Carnegie Museum of Art. Call 412/622-3131 or visit www.cmoa.org for more information.

Ongoing Exhibitions

Consuming Places
Brooklyn, New York
August 15–October 27, 2002
Making use of a neglected public space in DUMBO (Down Under the Manhattan Bridge Overpass), this exhibition includes site-specific work that activates its waterfront setting, and it incorporates the site's historic 19th-century structures. Works are by architects and designers Asymptote, Bill Fontana, and 212box. On Water Street between Main and Dock streets. For more information, call 212/206-6674 or visit www.creativetime.org.

Helmut Jacoby: Master of Architectural Drawings
Chicago
August 31–October 27, 2002
Quite possibly the best-known architectural renderer of the 20th century, Jacoby has worked for some of the brightest stars in architecture—from his earlier days in America with Philip Johnson, Eero Saarinen, I.M. Pei, Marcel Breuer, and others to his later work with international architects such as Sir Norman Foster and Helmut Jahn. His work serves to document the evolution of architecture from the 1950s through the '70s. At Kisho Kurokawa Gallery, Art Institute of Chicago. Call 312/443-3600.

Trespassing: Houses x Artists
Bellevue, Washington
August 31, 2002–January 5, 2003
New York City–based architecture firm OpenOffice invited nine artists to reimagine the possibilities of the house in conceptual terms. Ideas generated were mediated through OpenOffice into architectural proposals that redefine the spatial, psychological, and technical conventions of domesticity. At the Bellevue Art Museum. Call 425/519-075 or visit www.bellevueart.org for more information.

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Dates & Events

SHOPPING
Frankfurt, Germany
September 24–December 8, 2002
This exhibition analyzes the cultural phenomenon of shopping in the art of the 20th and 21st centuries. More than 70 artists are featured, all of whom, in some way or another, have dealt with consumer culture through visual art, architecture, and film. Among the artists on display are Rem Koolhaas, Marcel Duchamp, Jeff Koons, Claes Oldenburg, Gerhard Richter, and Andy Warhol. At the Schirn Kunsthalle Frankfurt. Call 069 29 98 820.

Remapping
New York City
September 14–October 14, 2002
A 10-foot-long digital photo collage of a typical Los Angeles reflective facade fills the space of the Storefront. Warren Neidich, the artist responsible for the work, explores the transformative ways that the brain records overlaps, reflections, and formal mutations in city environments. He even clads the rotating panels on the Storefront's facade with reflective stainless steel for adjustable reflections from the gallery's site. At the Storefront for Art and Architecture. Call 212/431-5795 for more information.

Arne Jacobsen: A Centenary Exhibition
New York City
September 27–November 9, 2002
Long before Scandinavian design became popular in America, Arne Jacobsen was producing the iconic architecture whose style typifies what we now know as "Scandinavian." The exhibition focuses on six of Jacobsen's major works in six different typologies—from institutional to leisure to educational—from the 1950s to the '70s. Also exhibited are pieces from his furniture and industrial designs. At the Scandinavia House. Call 212/879-9779 or visit www.amscan.org for more information.

Challenging Structure: Frank Gehry's Peter B. Lewis Building
Cleveland
October 6, 2002–February 24, 2003
This exhibition illustrates the development of Gehry's School of Management building at Case Western Reserve University, which opened in September 2002. The show is a convenient city-block away from the real building. See the work in all stages from initial conception, and then experience the built reality. At the Cleveland Museum of Art. Contact 216/707-2261 or www.clevelandart.org.

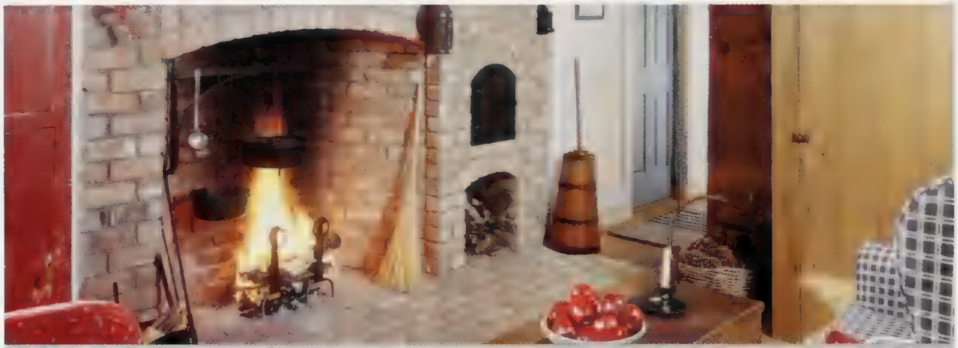
Krier/Eisenman: Two Ideologies
New Haven
November 4, 2002–February 7, 2003
The debate between the opposing architectural philosophies of Krier and Eisenman is the subject of this exhibition. Work by Krier, who focuses on considerations of context, site, and function to inform his designs, will be displayed across from Eisenman's, who regards abstract form as the architect's singular consideration. The exhibition is supplemented with a symposium on November 8–9. At the Yale School of Architecture. Contact 203/432-2288 or visit www.architecture.yale.edu.

Lectures, Symposia, & Conferences

American Society of Landscape Architects Annual Meeting & Expo
San Jose, California
October 18–22, 2002
This conference for designers includes education sessions that focus on specific landscape issues, such as parks and recreation planning, and general design and construction issues. The program, running for two days, includes talks on golf-course design, public spaces, desert architecture, and office-park architecture, among many others. For more information, call the ASLA in Washington, D.C., at 202/898-2444 or visit www.asla.org.

Outlook 2003 Executive Conference
Washington, D.C.
October 22–23, 2002
The construction industry is directly dependent on the current economic situation; this two-day conference discusses the extent of this relationship. With panelists such as Thomas Leppert, chairman and C.E.O. of the Turner Corporation, and Kermit Baker, chief economist for the AIA, discussions will focus on specific economic influences, in addition to the political, social, and environmental trends that affect the construction industry. Robert Murray, V.P. of McGraw-Hill Construction Economic Affairs, will give a one-year industry forecast. For more information, visit www.construction.com/events.

Constructing Beijing 2008
November 13–14, 2002



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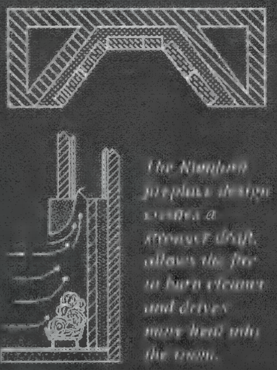

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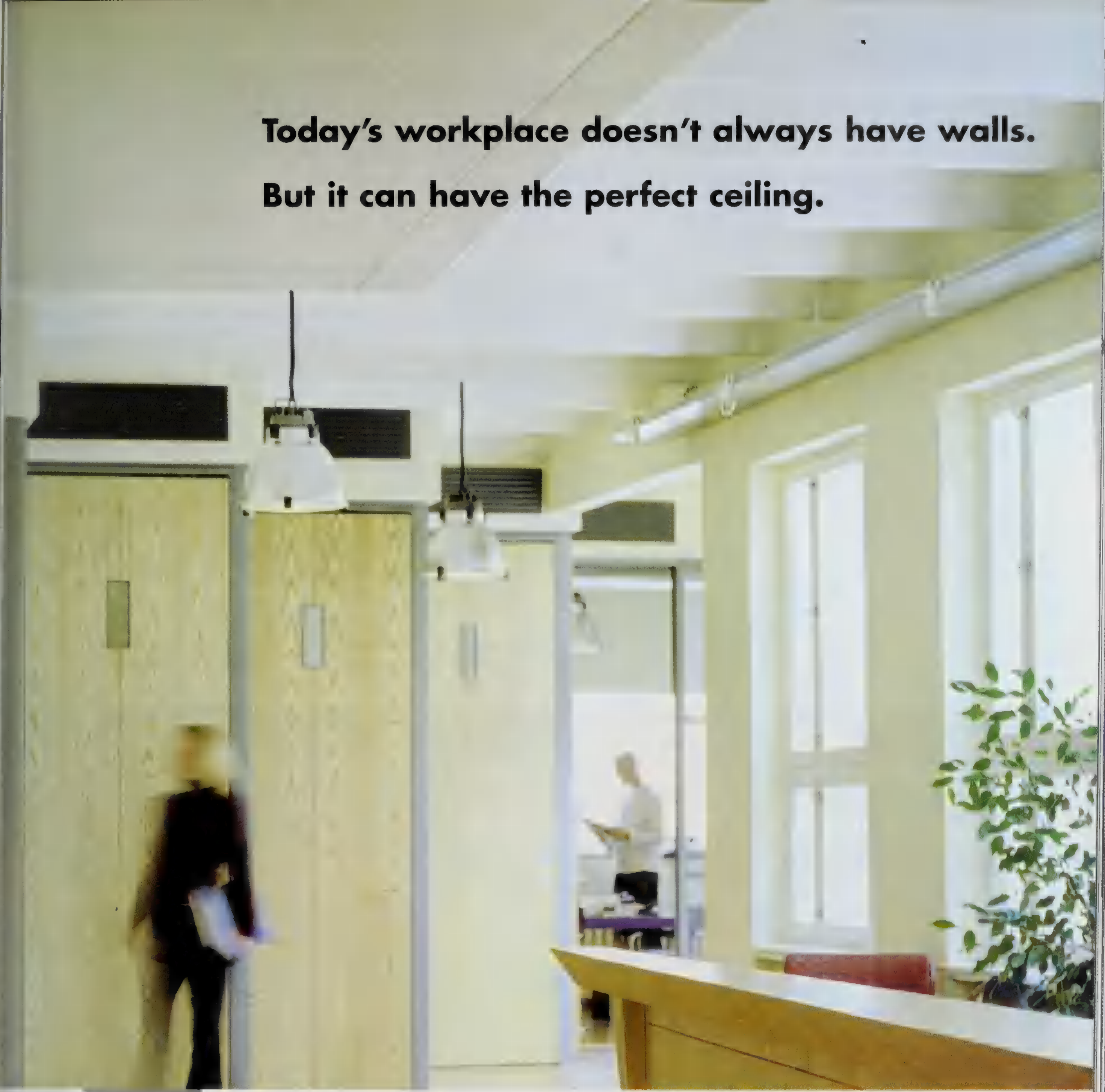
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Dates & Events

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AIA California Council Desert Practice Conference 2002
Indian Wells, California
November 15–17, 2002
This conference attempts to clarify the business of the practice of architecture. The conversation will cover project delivery, business and practice management, emerging practices, future trends, and expanded services. At Renaissance Esmeralda Resort. Call 916/448-9082 or visit www.aiacc.org/conferences.

35th International Making Cities Livable Conference
Monterey/Carmel, California
December 8–12, 2002
An international conference for architects, urban designers, city planners, landscape architects, transportation planners, social scientists, city managers, and public officials. A call for papers is currently under way. The deadline for submission of 200-word abstracts is October 30. For more information and to view topics for papers, see www.livablecities.org, call 831/626-9080, or e-mail suzanne.lennard@livablecities.org.

Events & Programs

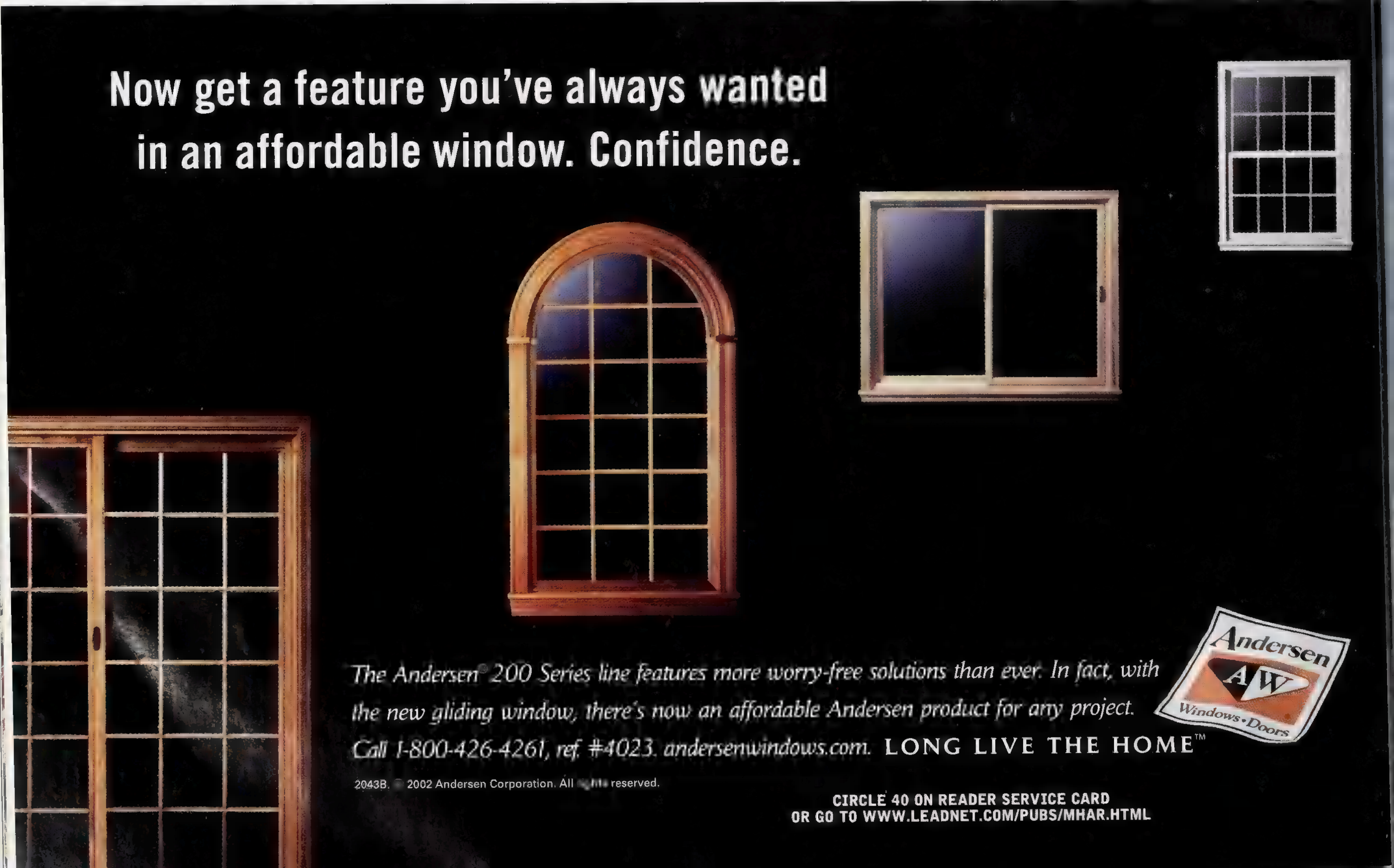
ENR Construction Summit
Washington, D.C.
October 21–22, 2002
Dedicated to "The Owners"—which is also its title—the 6th Annual ENR Construction Summit will involve high-level executives from the owner community—in both the private and public sectors—in a discussion of "the perfect owner." Other discussions will highlight changing owner requirements, and partnerships between a building's owner, designer, and contractor. For more information, visit www.construction.com/events.

Good Design is Good Business Awards Gala
Washington, D.C.
October 23, 2002
The collaboration of businessmen and architects is celebrated as *Business Week* and ARCHITECTURAL RECORD recognize 18 finalists for designs that incorporate business plans as part of the program. Winning designs in the 160-entry juried competition exhibit measurable business and organizational goals. In other words, looking good and making money. Visit www.construction.com/events for more information.

Competitions & Awards

International Competition for the Urban Development and Planning of Sustainable Housing in Guanajuato, Mexico
Deadline: October 15, 2002
The Federation of Architects of the Mexican Republic invites architects to submit designs for a sustainable urban housing complex. The program calls for 6 housing prototypes, with emphasis on sustainable public spaces, energy management, and water and waste recycling. For more information and to submit a design, call 52 5 5550 6049.

2002 FEIDAD Digital Space Animation Award



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Dates & Events

Deadline: October 25, 2002
The FEIDAD (that's Far Eastern International Digital Architectural Design) Award is open to all, despite it's exclusive-sounding title. The goal is to find the most progressive exploration of digital space in animation or graphic format. The competition welcomes (not exclusively) architects, artists, product designers, and, to quote the press release, "film designers, and sci-fi novelists." Read the whole *Dune* series for inspiration. For more information, visit www.feidad.org.

26th Annual Cooper Source Awards
Deadline: October 25, 2002
Open to any lighting designers, architects, interior designers, or other professionals who use light in an interior or exterior application. Two categories are available, one for professionals, the other for students, who will compete for a $1,500 cash prize. For more information, visit www.cooperlighting.com.

The Rome Prize
Deadline: November 1, 2002
The prestigious Rome Prize, whose historic winners include Louis Kahn, offers hefty stipends for advanced research and independent study in architecture, design, and other humanities-related fields. For more information, contact the American Academy in Rome at 212/751-7200 or visit www.aarome.org.

Mobile HIV/AIDS Health Clinic
Deadline: November 1, 2002
Architecture for Humanity, a nonprofit organization, announces its 2002 international design competition. Architects are invited to submit designs for a fully equipped mobile medical unit and HIV/AIDS treatment center for use specifically in Africa. Entry fees, donations, and additional fund-raising sources will be used to build the winner's prototype. Visit www.architectureforhumanity.org for information.

International Competition for the Design of "Ephemeral Structures in the City of Athens"
Deadline for dispatch or handing in of entries: November 11, 2002
Deadline for receipt of mailed entries: November 25, 2002
The Hellenic Cultural Heritage SA, supported by the Hellenic Ministry of Culture, is organizing this competition for the 2001–2004 Cultural Olympiad and the Athens 2004 Olympic Games. The program includes event platforms for music, dance, and other events that don't require seating; for open-air theaters; and for semi-open exhibition spaces, among others. For more information, you can call 33 10 976 95 10, visit the competition's Web site at www.culturalolympiad.gr/ephemeralcompetition, or e-mail ephemeral.competition@eeogroup.gr.

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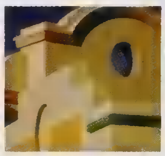

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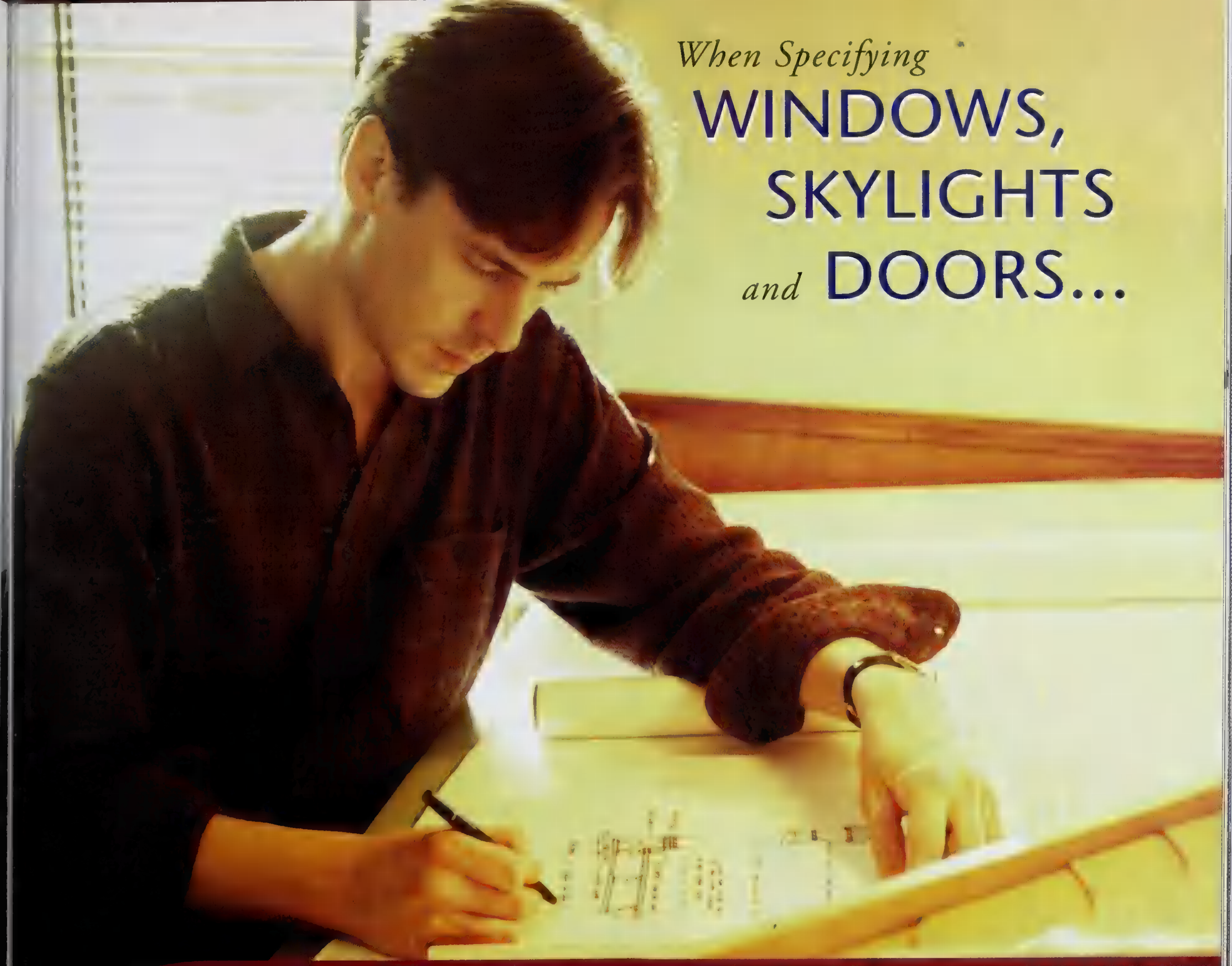

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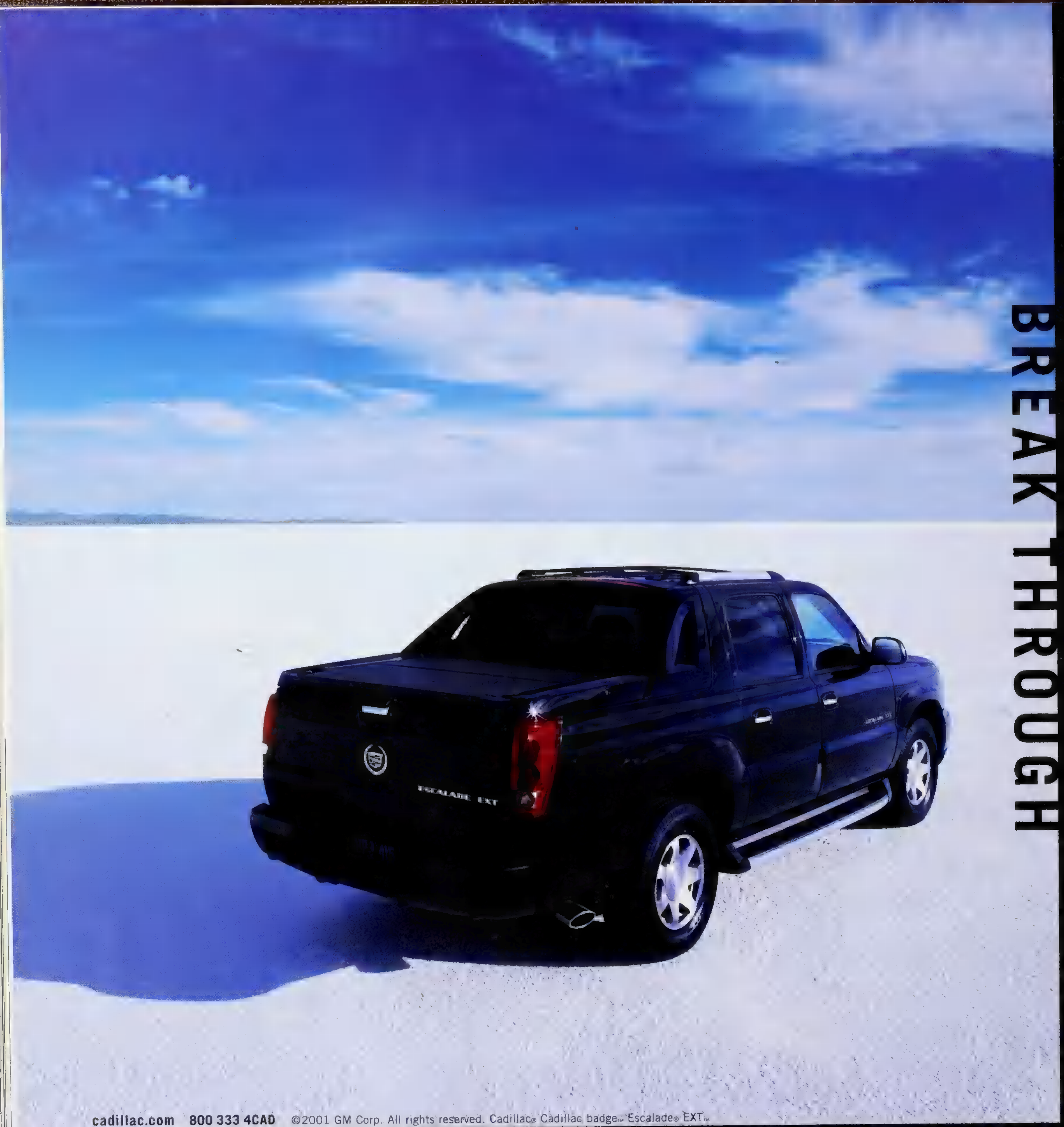

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FOR THE EMERGING ARCHITECT

Architects can't become architects without an education, and many teach to support their fledgling practices. At the same time, some tire of academic theory and ache to build something. This month, **archrecord2** addresses both sides of the academic divide: in **Design**, a profile of an architect who combines his academic and pragmatic impulses, and in **Work**, a presentation of students' theoretical designs for the World Trade Center site.

DESIGN

Keith Mitnick: Theory and Practice

In a department of architecture divided between theory and construction, Keith Mitnick must have made an ideal student. Not content to focus on one or the other of academic architecture's two extremes, he feels most comfortable in a sort of middle ground he has carved out for himself, trying to reconcile the two. "In academia," he says, "things tend to be too polarized between reflection on what things mean and the production of the things themselves. I get bored or frustrated when it becomes one or the other."

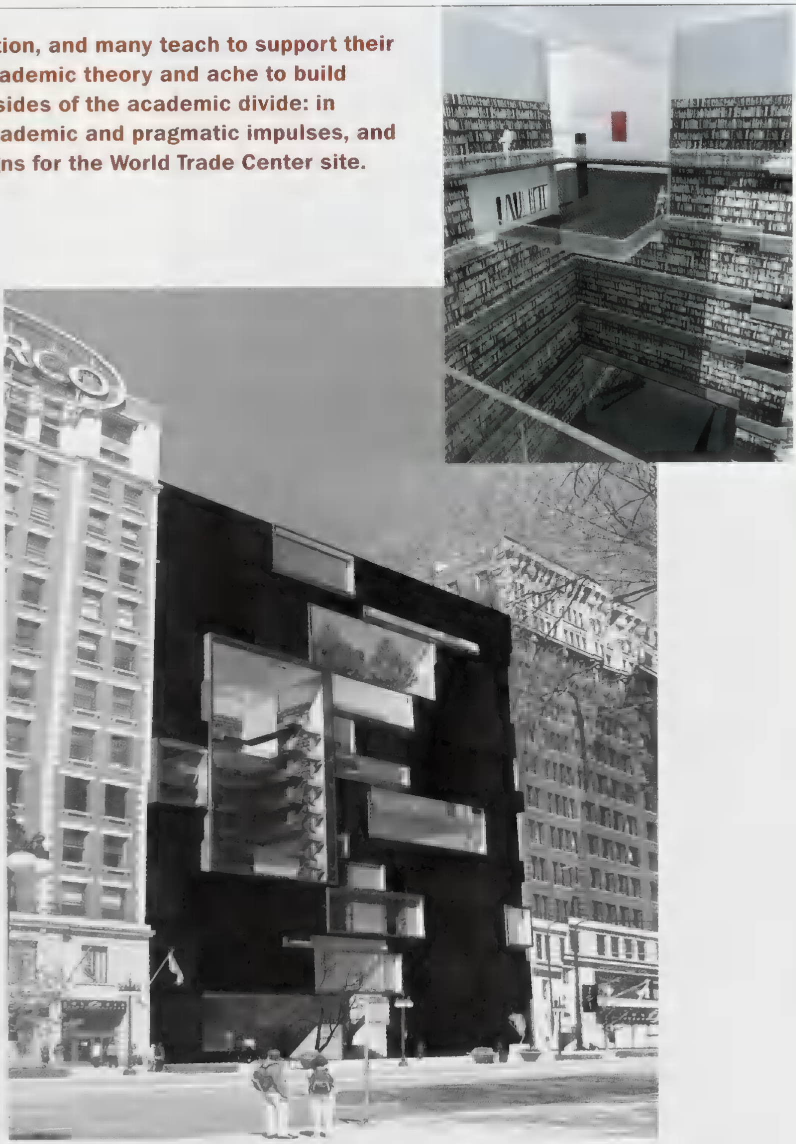
Mitnick began his intellectual life squarely on the theoretical side of things, though not in architecture. He studied art and philosophy as an undergraduate and, at first, set out to become a painter, setting up a studio in SoHo, in New York City. But he quickly became disillusioned.

"I couldn't see the social relevance of painting," he says. "It's such an elitist discourse. I even went so far as to apply and get accepted to the Art Institute of Chicago for painting, and then I bailed at the last minute. It was strange, because I was letting go of something without having something to replace it."

In the early 1990s, Mitnick dabbled in several fields: carpentry, construction, even glassblowing. None of these satisfied all of his intellectual interests. Mitnick characterizes his career path during this time as a pendulum, swinging back and forth from one extreme to another, but swinging in a narrower and narrower arc each time.

Architecture finally occurred to him as a possibility when he was doing exhibition installations for various art galleries. "My job was to arrange the work in space, as a way of embodying the meaning of the work," Mitnick says. "If you asked the curator, she'd say no, he was just the schmuck who hung the stuff up, but it was the first time there was a question about the meaning of what I was doing. It was the first time I was engaged in the process of design."

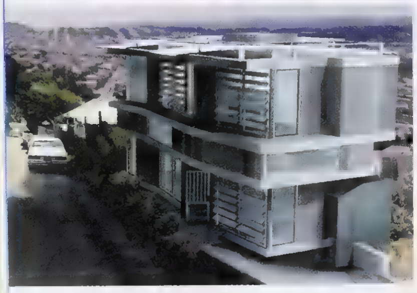
So Mitnick applied to the University of California, Berkeley for his M.Arch. "In school, the lights really came on," he says. "I didn't feel like I was swinging



Spertus Institute, Chicago, Burnham Prize, 2002

Keith Mitnick. A window facing the street that reveals the building's library atrium creates a three-dimensional sign for the institute.

(continued from previous page) back and forth anymore, doing one thing while worrying about another. No one was saying 'you need to find this intersection between theory and practice,' but I felt like it was available to me. You're taking history courses, you're taking theory courses, you're taking courses in construction, heating, ventilation, cooling systems. And then you're talking about what these things mean, and what your intentions are, and what happens when your intentions are aligned or misaligned with the product. And again, this relationship between the intellectual formulation and the production asserted itself."



2-Way House, San Francisco, 2001–present

Keith Mitnick. This house mediates between views of the city and its relationship with its neighborhood.

Mitnick and his frequent collaborator Mireille Roddier were both working day jobs in the Berkeley area when Mitnick applied for—and won—a teaching fellowship at the University of Michigan. (Roddier, coincidentally, won the same fellowship the following year). The fellowship, which gives the winner a faculty position somewhere between adjunct lecturer and full-time professor, has allowed Mitnick to pursue his academic ideas while simultaneously designing real buildings. "It's rare to be able to have a middle-ground opportunity like this," Mitnick says, and it's clear that it's the ideal sort of middle ground he has always been seeking. *Kevin Lerner*

Go to architecturalrecord.com/archrecord2 for more projects by Keith Mitnick, and for complete credits for the above projects.

The site promotes the past, so therefore the new space proposes the future.

WORK

Student studios address WTC plans

Shortly after the events of September 2001, RECORD issued a call for the results of student design studios that addressed problems surrounding the rebuilding of the World Trade Center site and environs. Designs began arriving in the magazine's offices almost immediately. Submissions came from universities such as the Pratt Institute and the New York Institute of Technology, both practically at the World Trade Center's former doorstep. But they also came from across the country—from Lawrence Technological University, in Michigan, from California State Polytechnic, in Pomona. Some classes took field trips to New York. Others worked out the problems from a

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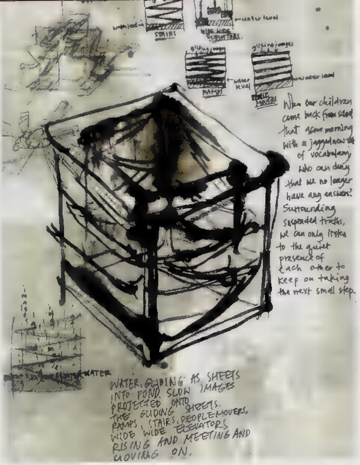
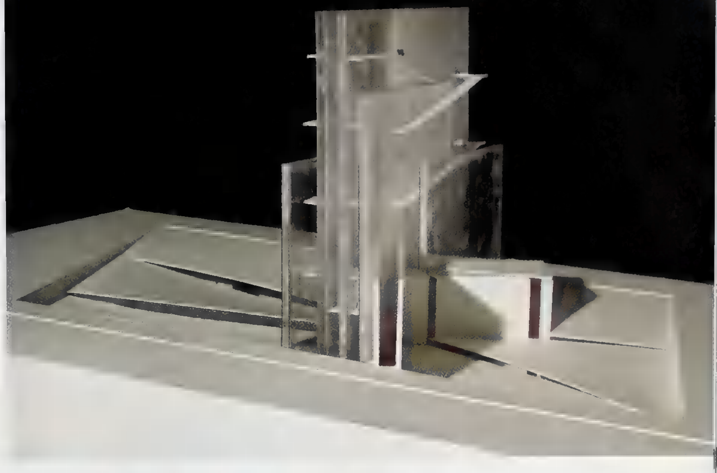
purely theoretical standpoint.

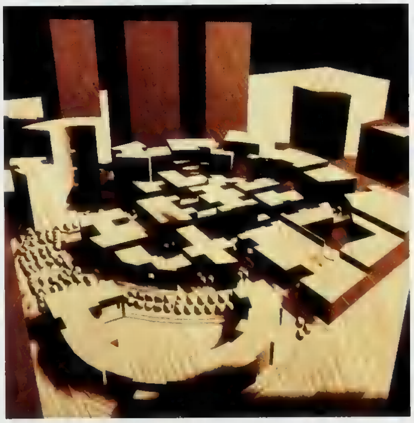
At the Harvard Graduate School of Design, a small group of students organized a conceptual design competition (one of the entries is shown at the right). Two of the participants, Paul Tebben and Joseph Meier, went on to organize a student forum in response to the attacks. At Pratt, one studio, led by professor Theoharis David, focused on the specific problem of rebuilding St. Nicholas, a tiny Greek Orthodox church that was destroyed in the collapse of the twin towers (far right). Professor Joongsub Kim's class at Lawrence Technological University looked at the urban design questions that will be faced in the rebuilding process (opposite, right, and this page, bottom). Other classes approached the whole site, from planning to design, in a single project. Several students also took upon themselves the responsibility of designing and submitting plans that they worked on independently, outside of classroom studio projects.

A small selection of these student proposals is published on these pages. Many more proposals of equal value can be found at architecturalrecord.com, where space permits a broader presentation. In addition, RECORD will continue to accept submissions of student work. Contact Kevin Lerner by e-mail at kevin_lerner@mcgraw-hill.com for submission information.

To see all of the student designs for the World Trade Center site, visit *architecturalrecord.com/wtc*.







Student designs for Lower Manhattan by (clockwise from opposite, right) Victor Navarro, Benita Lee, Michi Akutsu, and David Giroux.

AKUTSU (TOP RIGHT); DRAWING: COURTESY BENITA LEE (TOP LEFT)

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The University of Chicago modernizes with $442 million in construction projects

Correspondent's File

By John E. Czarnecki, Assoc. AIA

The University of Chicago, with a well-known tradition of academic excellence, ranks as one of the top universities in the country in the sciences, business, and law. Its original neo-Gothic buildings, grouped around quadrangles, form the heart of the campus—a bucolic setting along Chicago's Midway Plaisance, part of the city's boulevard system planned by Frederick Law Olmsted. Over the past 40 years, many of the campus facilities had reached capacity and no longer met current academic needs, even though a number of modern structures, including a Brutalist main library by Walter Netsch, had been added to the campus. A recent University of Chicago planning document described the campus condition: "The newest student housing is 40 years old, the Research Institutes are 50 years old, and athletics and recreation are housed in buildings dating back to 1903." Now in the midst of a building boom, the university is remedying the situation with a $442 million construction commitment for a variety of projects (funding sources vary per project) from architects including Ricardo Legorreta, Hon. FAIA, Cesar Pelli, FAIA, and Rafael Viñoly, FAIA.

History

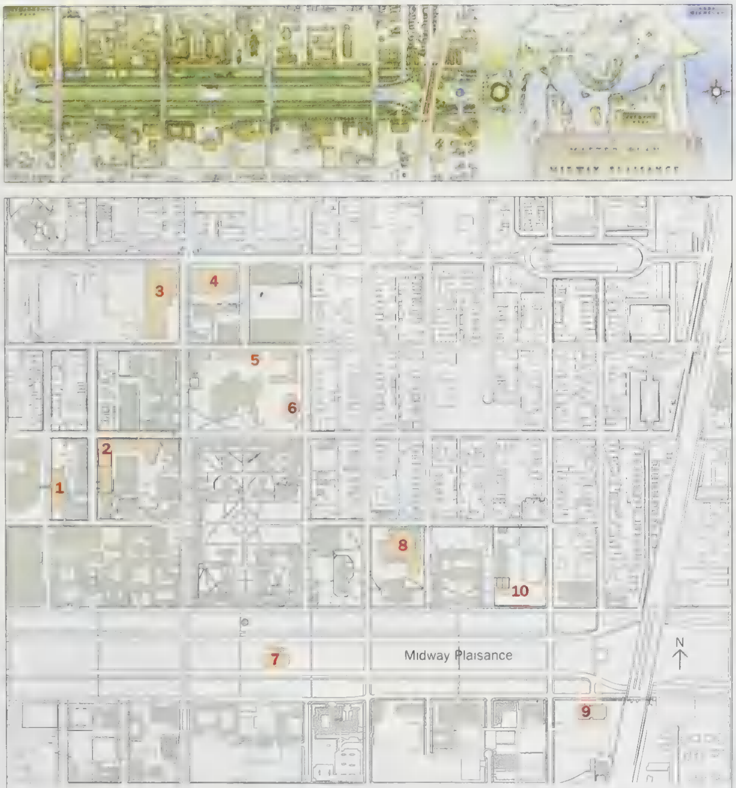
The origins of the University of Chicago's campus date to Henry Ives Cobb's 1891 plans for a main quadrangle surrounded by six smaller quads of English Gothic buildings designed to resemble Oxford University. Completed with the help of substantial funding by John D. Rockefeller, the neo-Gothic campus changed little until a 1955 plan by Eero Saarinen set the framework for modern buildings, new student housing, and campus growth south of the Midway, including Saarinen's law school building. The university took action on its own in an intense period of urban renewal to stabilize the surrounding South Side neighborhood from 1960 to 1985, when 29 buildings were constructed and the institution purchased some of the surrounding homes for use as student residences.

By the 1990s, the university faced capacity in a number of aging buildings, while other universities nationally were beginning major construction projects. "Most universities, certainly the University of Chicago included, had gone a very long time without really advancing the overall physical campus, and it was time for us to do that," says Geoffrey Stone, a University of Chicago law professor who was the school's provost when it undertook a master-planning process in the late 1990s. "If one university was building, then it was risky for another university not to do it. All of these institutions were driven in some way by competition."

In 1999, NBBJ Architects completed the third comprehensive master plan in the school's history. Curt Heuring, the university architect, is currently overseeing the plan's implementation. The plan recommends siting and development guidelines for nine new buildings, six of which are complete, as well as landscaping. "One of the subconscious goals was to take advantage of the fact that the campus was not fully developed and to allow those places to be developed in a positive way," Stone says. He notes that appropriate siting "was the paramount goal."

Recognizing that the Midway

Olin Partnership developed a landscape plan to enhance the Midway Plaisance (below). Each new building is numbered in the campus map (bottom).



1. *Comer Children's Hospital*
2. *Interdivisional Research Building*
3. *Ratner Athletics Center*
4. *Parking structure*
5. *Palevsky Residential Commons*
6. *Bartlett Commons*
7. *Midway Skating Rink*
8. *Graduate School of Business*
9. *University Press Building*
10. *Kovler Gym*

Plaisance is city property that is actually an integral part of the University of Chicago campus and identity, the university partnered with the Chicago Park District to consider the future of this 1-mile-long green swath that connects Jackson Park and the lakefront to the east with Washington Park to the west. In 1999, the university and city hired Philadelphia-based landscape architecture firm Olin Partnership, in association with Chicago's Wolff Clements and Associates, to develop a master plan (shown on previous page) for the Midway Plaisance itself, originally planned by Olmsted as a part of the 1893 Columbian Exposition. Although only ⅛ of a mile in width, the Midway divides the campus physically and psychologically. Stone says the plan was developed to "energize the Midway and make it something that people walk through and enjoy rather than simply go across."

The Midway plan proposes a series of permanent gardens, including a pair of Winter Gardens, a Reading Garden, and a Health and Fitness Garden. Construction and plantings will be complete on two of the gardens by spring 2003. Olin Partnership has also called for traffic-calming devices along the Midway, new lighting, and enhanced landscaping. An urban horticulture center with a variety of demonstration gardens is proposed on the site of a former gas station adjacent to the Midway.

Skating rink on the Midway

Legorreta's dormitory building in orange brick.

Central to the reconsidered Midway Plaisance is a new $3.9 million public skating rink and warming house designed by Chicago's Nagle Hartray Danker Kagan McKay for the University of Chicago in collaboration with the Chicago Park District. Completed in 2001 and located on the site of the world's first-ever ferris wheel, which was constructed for the 1893 Columbian Exposition, the warming house has a rooftop terrace providing views of the ice rink, the Midway, and the university.

Nagle Hartray Danker Kagan McKay also designed a $9.8 million gymnasium and reconfiguration of athletic facilities for the University of Chicago Laboratory School—a K-12 school operated by the university.

As part of its master plan, the university sited one of its new buildings—a new home for the University of Chicago Press by Booth Hansen Associates—south of the Midway in an effort to enliven that portion of the campus. The $11 million, four-story office building, with precast-concrete panels cast to match the Indiana Limestone on other campus buildings, opened in January 2001.

Legorreta's bold statement

Perhaps making the boldest statement on campus among the new buildings is a dormitory—the Max Palevsky Residential Commons (above)—by Legorreta. Named after the University of Chicago alum who founded both Scientific Data Systems and Intel Corporation and gave $20 million for the project, the $45 million facility for 734 students was completed in time for the spring 2002 semester. While Legorreta, who worked with Chicago's VOA Associates

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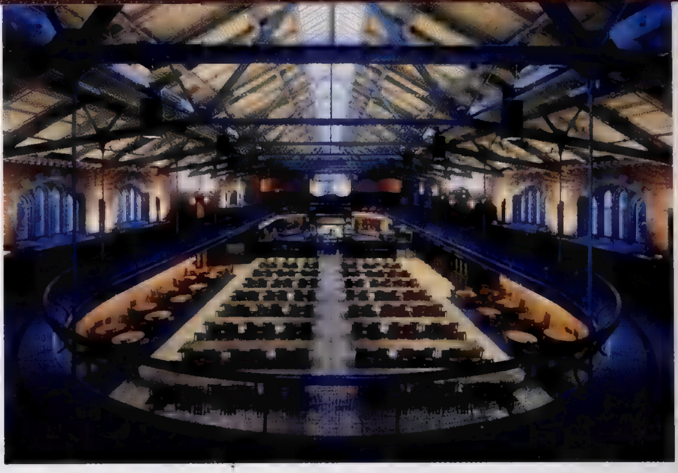
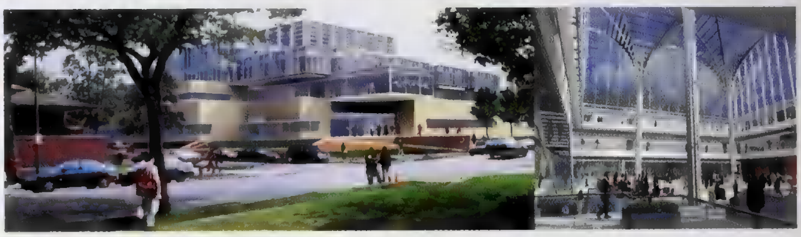
on the dorms, has completed other projects in this country, this is one of his few buildings in the Midwest. True to his roots, he employs a bright palette of colors, including a bright orange brick. Residence hall communal spaces are each denoted with bright colors that students have already dubbed Barney purple, Barbie pink, and Big Bird yellow.

Color issues aside, the three Palevsky buildings, each configured in a traditional, linear plan, nicely form a series of outdoor courtyards by ringing the northern edge of a block occupied by the Regenstein Library. Intended for freshmen, the dorms signal a return to 24-hour student life at the campus center. "There's clearly a lot of controversy over Legorreta's design," Stone says. "From a functional standpoint, though, it's an unqualified success that accomplishes what we wanted."





Bartlett Commons (right) is a dining hall in a former gymnasium. Viñoly's Graduate School of Business (below) will be across from the Robie House.

Adjacent to the Palevsky buildings is the 100-year-old Bartlett Hall, a former gymnasium that has been transformed in a $13.3 million restoration and adaptive reuse by Bruner/Cott & Associates, of Cambridge, Massachusetts, into Bartlett Commons—a dining hall and multiuse facility (top right) that opened this year. A rooftop skylight was restored and the elevated running track now serves as an observation deck and lounge.

A new home for business

Construction is about to begin on what may be the most highly anticipated new building on campus—the new home for the Graduate School of Business (above), considered by experts to be one of the best business schools in the country, by Rafael Viñoly Architects. To be located across the street from both the Rockefeller Chapel and Frank Lloyd Wright's Robie House, the business school will be situated in an architecturally significant environment. Low, linear volumes will echo the linearity of

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Wright's Robie House, and an 83-foot-tall, glass-enclosed winter garden at the center of the building will be supported by columns that evoke the curved geometry of Gothic vaults. The 900 business students in the school currently take courses in older neo-Gothic buildings without ample room for study and debate—the hallmark of the university—outside of class. The $90 million business school will be completed in September 2004. "The building will meet our objectives to foster collaboration among students and faculty," says Ted Snyder, dean of the Graduate School of Business.

Upcoming in Chicago

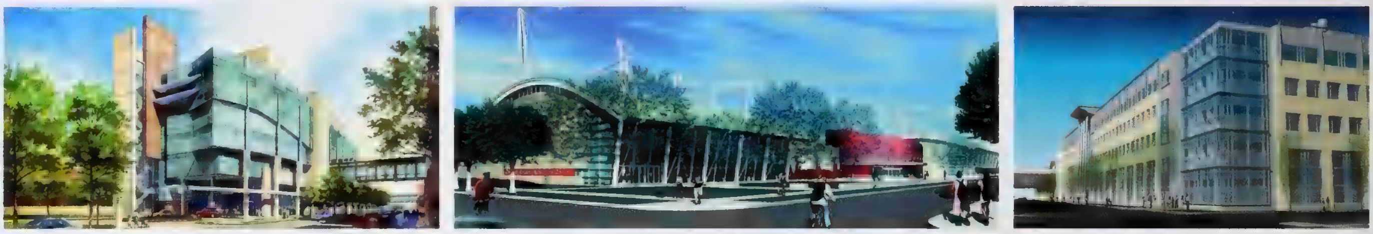
The university also anticipates completion of the $40 million Gerald Ratner Athletics Center (below center) by Pelli in late 2003. The athletics building, with an Olympic-size pool, gymnasiums, and fitness facility, will be across the street from another Pelli building, a $20 million parking structure with ground-floor retail completed in 2001. Together, the parking structure and the athletics building, implementing a similar vocabulary of materials and structure, will form a new northern gateway to the campus on Ellis Avenue at 55th Street.

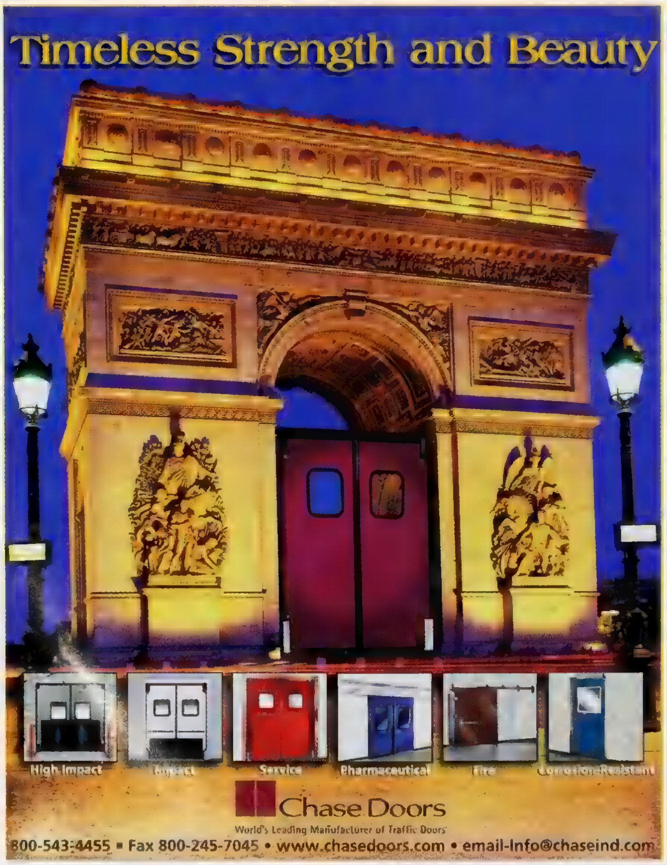
The most expensive single building project will be a $139 million Interdivisional Research Building (below right) by Ellenzweig Associates, of Cambridge, Massachusetts, to open in 2005. The 425,000-square-foot building, clad in limestone, metal, and glass, will combine laboratory spaces for chemistry, structural molecular biology, and biochemistry.

Also under construction is a $68 million hospital—Comer Children's Hospital (below left)—by HLM Design with Atlanta's Stanley Beaman & Sears. To open in 2004, the 155-bed hospital will connect with the rest of the University of Chicago Hospitals campus.

Stone succinctly explained why it is necessary for the university to build this variety of new structures at this time: "If you want to recruit first-rate scientists, you need first-rate laboratories, and if you want the best undergraduates, you have to provide them with something better than a 100-year-old swimming pool." ■

The 155-bed Comer Children's Hospital (left) by HLM Design with Stanley Beaman & Sears will open in 2004. The Gerald Ratner Athletics Center (middle) by Cesar Pelli opens in 2003. The Interdivisional Research Building by Ellenzweig Associates (right) opens in 2005.

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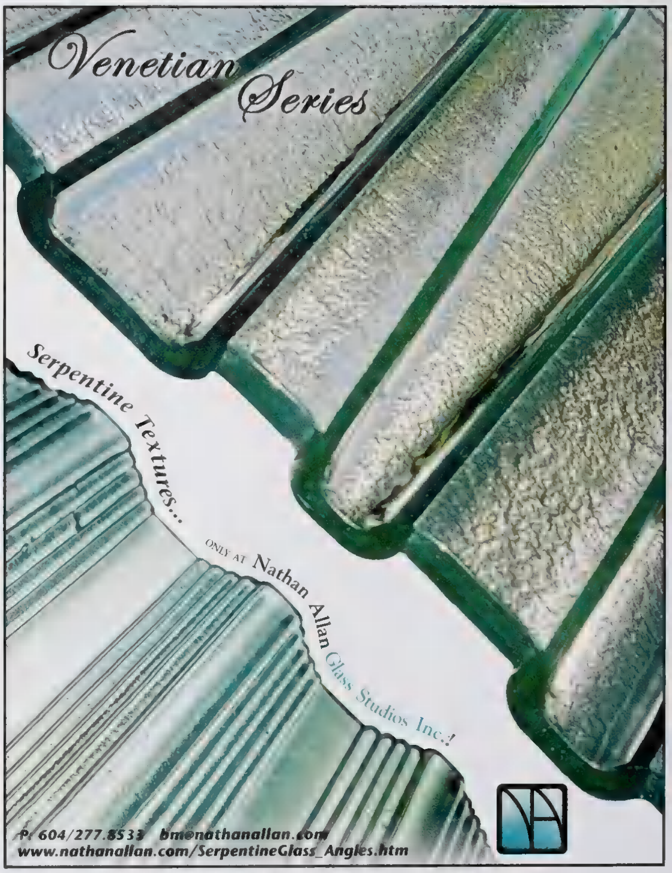
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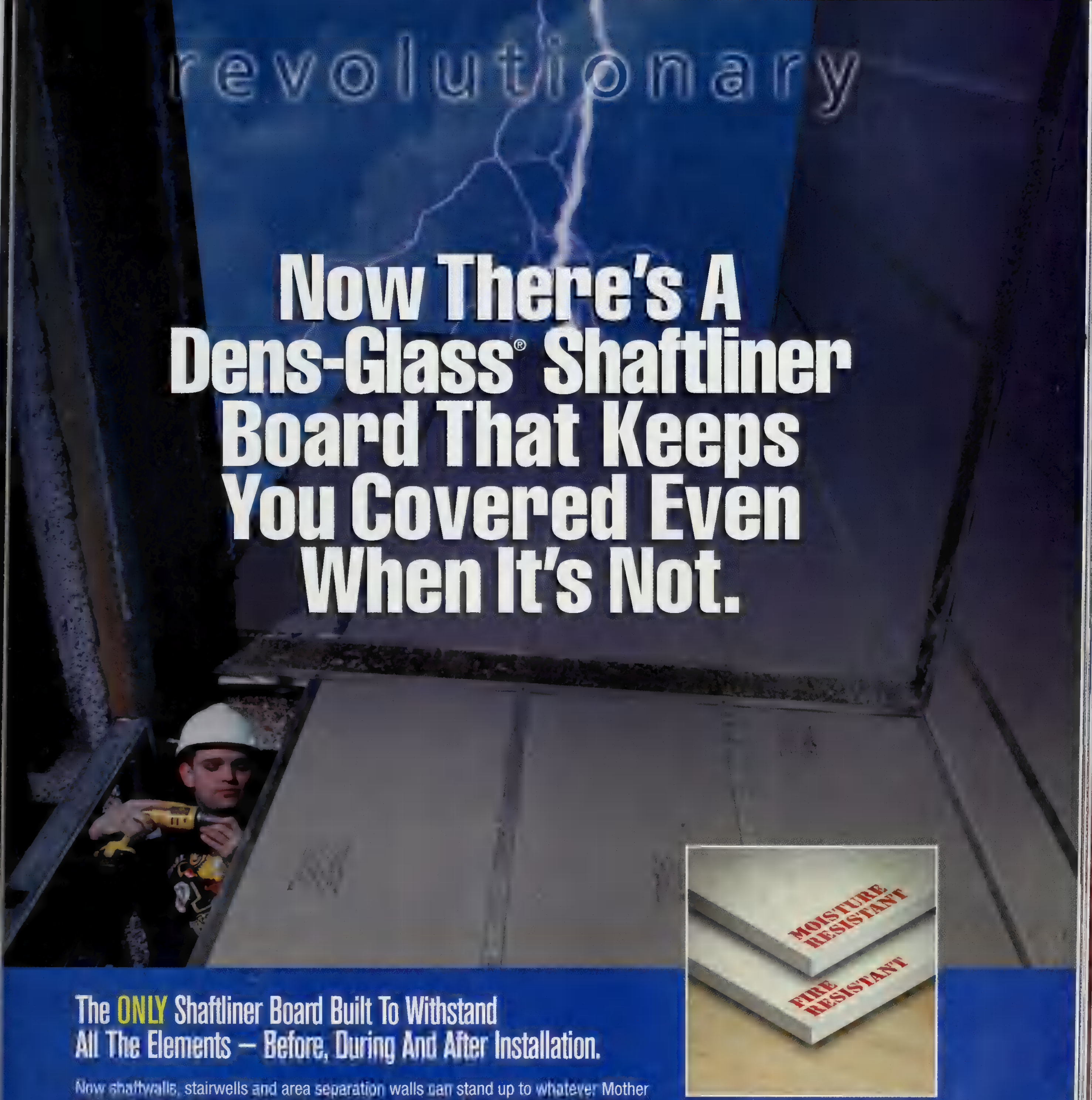

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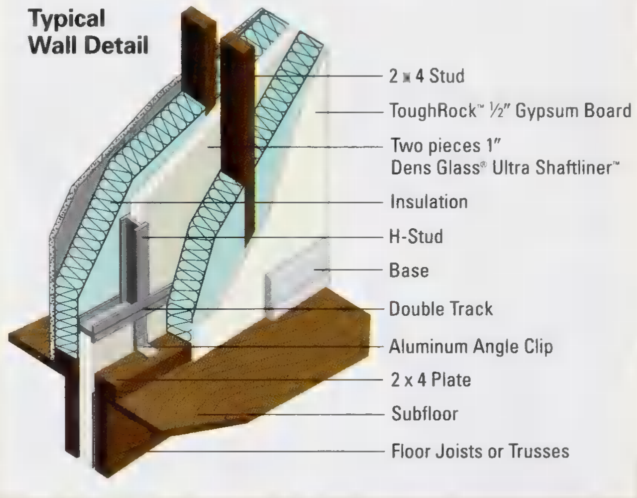

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Users look for the name tags before buying architecture—or blue jeans—today

Critique

By Robert Campbell, FAIA

Princeton is building a new dormitory in the Gothic Revival style. It is being designed by Demetri Porphyrios, the brilliant traditionalist writer and designer in Britain.

Why Gothic Revival—or Collegiate Gothic, if you prefer that term—in the 21st century? It's a question worth pondering, and it probably isn't one we should leap to conclusions about.

Princeton undergrads, I'm informed, look with disdain at contemporary buildings. They all want to live in the old Gothic dorms, even when the accommodations are less practical. There's even talk of possibly demolishing some of the newer, more Modernist dorms.

For better or worse, it seems to me, we are talking here about brand image—about brandscape architecture. The students want the right architectural logo, the one that says "Ivy League" as clearly as low-rise jeans in high school say "hip." These are the kids who grew up wearing shirts that said Gap or Abercrombie & Fitch, who explain their identities to one another by listing their favorite music groups. Who you are is what you consume. And what you consume, in today's world, is brands.

It's the trustees, though, not the students, who decided what the new dorm should look like. So I checked with Lizz Plater-Zyberk, who, besides being dean of the architecture school at the University of Miami and a founder of the New Urbanism movement, is a longtime trustee of Princeton, where she chairs the grounds and buildings committee.

Contributing editor Robert Campbell, FAIA, is the architecture critic of The Boston Globe.

"Some of the alumni, and indeed students, have been talking about the fact that we should be able to build in Gothic again," she says. "We had a study done of the campus, which divided it into four quadrants. In the old northwest quadrant, we decided that whatever is done will retain and reinforce its historic character. Two of the other quadrants are middle ground, where architects like Michael Dennis and Rodolfo Machado are doing buildings that look to traditional form but with a new interpretation. The fourth quadrant is the area of growth where the newest things happen."

The real issue here is one that architects have been shy about mentioning ever since the dawn of the modern era. It's the issue of architectural style. All buildings have style, whether intended or not, and the language of styles speaks quite clearly to people. "That is true," says Lizz. "My bias is that style plays its strongest card when it's place-based, when it reinforces itself as a sense of place. And that's usually done by reiteration rather than great variety."

Gothic architecture, it should be noted, has been a Princeton brand for only about 100 of the university's 250 years. It was only around 1900 that Princeton adopted Gothic. Paul Venable Turner, in his book *Campus: An American Planning Tradition*, describes the change in a chapter called "The Remaking of Princeton." Princeton hired, as master planner, architect Ralph Adams Cram, who announced that Gothic evoked "racial memories" because it was so English. Princeton's president, Woodrow Wilson, wrote: "By the simple device of building our new buildings in the Tudor Gothic Style we seem to have added to Princeton the age of Oxford and Cambridge; we have added a thousand years to the history of Princeton." Well, they didn't really add a millennium. What they did was stamp a brand on the place. That the brand was white Anglo-Saxon (and High-Church Anglican) didn't seem to bother anyone then, and doesn't seem to do so now.

Style speaks of many things. One of them is social class. After I wrote about Princeton's tilt to Gothic in my local paper, I received a letter from a lawyer friend. I quote:

"I was a Brooklyn-born-and-bred kid who, by a fluke, ended up in the Princeton class of 1964. The Gothic buildings were part of Princeton's class-and-caste system when I was there. The wealthy students lived in the Gothic dorms. The scholarship students were all segregated in the non-Gothic dorms. The symbolism was clear. Everyone knew where he stood at Princeton by the dorm he lived in.

Although 250 years old, Princeton went Gothic only about 100 years ago.

"The Gothic dorms were the most expensive. The non-Gothic dorms were cheaper. A scholarship student's budget had to be based upon the cheapest accommodations, which is why all the scholarship students ended up in the same few dorms, all non-Gothic.

"Architecture played an important role at Princeton in telling everyone who was where in the pecking order."

Architecture has always been

good at telling people where they stand in the social order.

There are many instances of this kind of historic brandscaping in American history. The famously lovely white village of Litchfield, Connecticut, owes its apparently historic appearance in large part to a radical reconstruction during the Colonial Revival fad of the 1920s, when many of its Victorian houses were retrofitted to look more like the 18th century. The Colonial Revival was, in large part, a move to assert the hegemony of old-family Anglophiles against the waves of immigration from southern and eastern Europe in the early 20th century. Even more inventive was the decision of Santa Fe, New Mexico, early in the 20th century, that all buildings must be built of adobe, leading eventually to the insanity of a multistory pseudo-adobe parking garage. Like the houses of Litchfield, the Governor's Palace in Santa Fe was retro-designed to look like what somebody imagined it might have been a couple of centuries earlier. Santa Fe is an early example of a theme park. We Americans, who all came here from somewhere else, are forever seeking historic roots. We do that all the more desperately if we have to invent them.

B-School Georgian

Or take a more recent example. You'd expect a business school to be heavily into branding, and you'd be right. When the Harvard Business School built its recent student center, Spangler Hall, it was taken for granted that it must resemble the redbrick Georgian Revival architecture of that school's first buildings, which in turn were an imitation of the genuine Georgian 18th-century architecture of parts of Harvard Yard. "We said, well, if it has to be Georgian, let's find someone who can do Georgian well," former Harvard president Neal Rudenstine once told me. Brandmeister Robert A.M. Stern handled the job—especially on the building's exterior—with genuine invention and skill.

So is Princeton about to become a Gothic theme park? We'll have to see. It's fun to think of the Princeton kids in their jeans and casual shirts wandering around in Gothic halls. Surely, in such a setting, they will always look like summer tourists.

Brandscaping is neither good nor bad, but rather it is inevitable. People have always imitated the styles of other cultures in order to make statements. Just as Princeton imitated Oxbridge, the Renaissance architects imitated Rome and the English Palladians imitated the Renaissance (as does our Palladian White House). A lot of that had to do with establishing class status. Maybe that's why Texas nouveau-millionaire developers hired Easterner Philip Johnson, in his elegant wasp-waisted suits. Johnson was a symbol of aristocracy, a brand unto himself.

Even the Socialist Modern architecture of the 1920s was, in its own way, a political kind of brandscaping, all the more class-conscious because it was so anticlassist. Brandscape architecture can be good or bad. It can become more statement than architecture. If it's revivalist, it can be a thin stage-set version of a revered style, creating buildings that look as if they're constructed out of papier-mâché (although of course we've seen architects who enjoy that very joke). Or it can take a tradition and adapt it to changing circumstances, and do that with verve and imagination and craft while maintaining a sense of historic continuity.

My problem with Princeton isn't the brandscaping, for all the elitism it implies. My problem is a different one. I'm just afraid the university won't get Cram's quality along with his snobbery. ■

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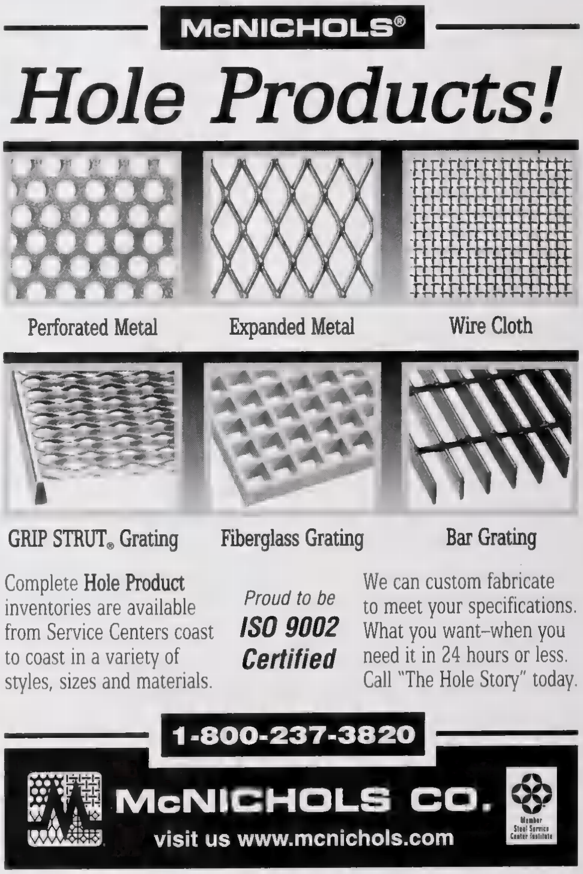
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Three firms that explore the overlapping realms of art, philosophy, and design

Books

By Andrea Oppenheimer Dean

UN Studio: Unfold, *edited and with texts by Ben van Berkel and Caroline Bos. Rotterdam: Nai Publishers, 2002, 150 pages, $40.*
Asymptote: Flux, *by Lise Anne Couture and Hani Rashid. New York: Phaidon, 2002, 240 pages, $60.*
Blur: The Making of Nothing, *by Elizabeth Diller and Ricardo Scofidio. New York: Harry N. Abrams, 2002, 384 pages, $35.*

Taken together, these books sketch out an architectural vanguard. Three husband-and-wife teams—Ben van Berkel and Caroline Bos of UN Studio, Hani Rashid and Lise Anne Couture of Asymptote, and Elizabeth Diller and Ricardo Scofidio of Diller + Scofidio—all engage the new realm of digital media. They are enthralled by flickering images, the ability of computers to shape sensuous forms, and philosophical questions posed by information technologies. These architects see a future of digital media merging with conventional architecture.

Predisposed by a fast-moving advertising-and-information age, their restless minds surf from one type of challenge to another. Their firms are interdisciplinary and collaborative. Their work, influenced by advertising's slick techniques, pushes architecture's boundaries into installation art, mixed-media environments, and beyond. They claim to have left Modernist, linear thinking behind. Too slow, too one-track, too boring. Their book titles are telling: *Flux, Unfold, Blur*. They position themselves between art and the pragmatics of economics and commerce.

Publishing form follows 'tude: All three books share a nonlinear, magazinelike format, interweaving interviews, articles, photographs, and drawings. At a time when architecture magazines are folding and repositioning themselves, books like these might be seen as filling a gap.

UN Studio: Unfold is, perhaps, the most ambitious and most visually stunning of the three volumes. Van Berkel and Bos describe their firm as "built along the idea of a United Network," hence the UN in the name of their Dutch practice. *Unfold* presents their newest projects together with a number of older, unpublished ones, including the restructuring of the transit station area in Arnhem, and the Nuclear Magnetic Resonance Laboratory in Utrecht, in the Netherlands, a generating station in Innsbruck, Austria, and the competition-winning design for the Ponte Parodi in Genoa, Italy.

In an introductory essay, Aaron Betsky describes van Berkel and Bos's architecture as one of instability and continuously flowing shapes, their buildings as "unfolding from their constituent parts, from their infrastructure, from data, and from details." He says the partners see their work as occupying a place "between airports and art," between invisible infrastructure and stated form, between commercial concerns and the "authority of form."

Van Berkel and Bos, in turn, write that they want their architecture "to break with the narrow, self-rationalizing discourse of architecture." But in the book's interview, especially, their 21st-century discourse falls back on obfuscating, 20th-century theoretical jargon. It's not their English that's at fault, as evidenced by Bos's graceful tales about building users, commissioners, and passersby. As with most jargon, theirs shrouds imprecise thinking. Another incongruity: Rather than appearing to flow, two of the book's three completed new buildings, the NMR Laboratory in Utrecht and the electricity station in Innsbruck, look lumpy.

Asymptote, the mathematical term Rashid and Couture chose as the name for their firm at its launching in 1987, describes two lines moving toward but never reaching a vanishing point. Rashid and Couture contend that an asymptote, always on the move, dynamic, and changing, describes their view of architecture. It also characterizes their practice, which, they say, operates "in a territory between theory and practice," where neither contaminates the other. (See article, page 108.)

In an interview in *Flux*, Christian Pongratz and Maria-Rita Perbellini ask Rashid what is most gratifying about the architectural profession. Rashid replies that "it is in a state of complete disrepair and open for total reconfiguration." Asked his take on form and function, he says, "Form augments function and function mutates form."

Flux's format is as fluid as the firm's experimental work. Projects—many of them virtual, executed in a variety of media, and accompanied by explanatory texts—follow upon one another as in a filmstrip that has no defined beginning or end but can be stopped and explored at any point. Four-color photographs are interspersed with collages of photographs and computer-generated diagrams. The volume includes furniture, interiors, whole buildings, urban design, installation art, and interactive digital environments, including a trading floor for the New York Stock Exchange, a multimedia research park in Kyoto, and a virtual branch for the Guggenheim Museum.

One not inconsiderable problem posed by virtual designs, such as those in *Flux*, is that it's hard to distinguish between virtual architecture and virtually (but not completely) finished architecture. It's all two-dimensional. That leads to a thornier question: If, as Rashid and Couture believe, actual buildings will increasingly take on characteristics of virtual architecture, how do we prevent the built environment from becoming as insubstantial and visually noisy as virtual design?

Blur: The Making of Nothing attempts to capture Diller + Scofidio's experience of creating their media pavilion for Swiss Expo 2002. The project consists of a cloud over Lake Neuchatel in Yverdon-les-Bains formed by 30,000 fog nozzles mounted on an immense structure of steel cables. *Blur* also walks the reader through Diller + Scofidio's foggy, eerily vacant maze: Visitors navigate the mist cloaked in "braincoats," technologically advanced rainwear programmed with visitors' likes and dislikes as revealed by a questionnaire administered before they enter the cloud. The braincoat glows red when a congenial person approaches and pings when a perfect match comes near. "The project challenges our dependence on vision as the dominant sense," Diller writes in a presentation to the client.

The architects' intention in creating the Blur pavilion, Diller says, was "to weave together architecture and electronic technologies, yet exchange the properties of each for the other. Thus, architecture would dematerialize and electronic media, normally ephemeral, would become palpable in space."

Blur will be the enduring expression of Diller + Scofidio's Expo 2002 project after it is dismantled. It documents the pavilion from conception through completion. Made up of correspondence, discussions, construction drawings, and photographs, the book is part scrapbook, part anthology of stories and images. It is the least glossy and most precise of the three books. Rather than just talking about merging digital media and architecture, Diller + Scofidio has done so and created a thought-provoking, transcendent apparition that rises to the level of art.

Skin: Surface Substance + Design, *by Ellen Lupton. New York: Princeton Architectural Press, 2002, 240 pages, $35.*

Do judge this book by its cover: a dimpled, skinlike, and photographically precise pattern that looks both flat and three-dimensional, real and fake, spooky and slick. And it's padded. With the rise of digital media, Ellen Lupton writes, "the primacy of the skeleton has given way to the primacy of skin," whose surfaces can be folded, warped, or pumped with air to become load-bearing. Like the exhibition at the Cooper-Hewitt National Design Museum on which it's based, this book looks at products, furniture, interiors, architecture, and media and describes what Lupton calls "a new organicism" that mirrors "the convergence of natural and artificial life. It is a phenomenon of surfaces that resemble living creatures while remaining distinctly artificial. It is a phenomenon that extends the concept of surface." While living skin has become a commercially manufactured product, industrial skins have assumed a life of their own. "It is a life whose pedigree, however, is more alien than human." Lupton regards skin as a cultural metaphor, which is what makes this beautifully produced book, with its often-disturbing images, so provocative. ■

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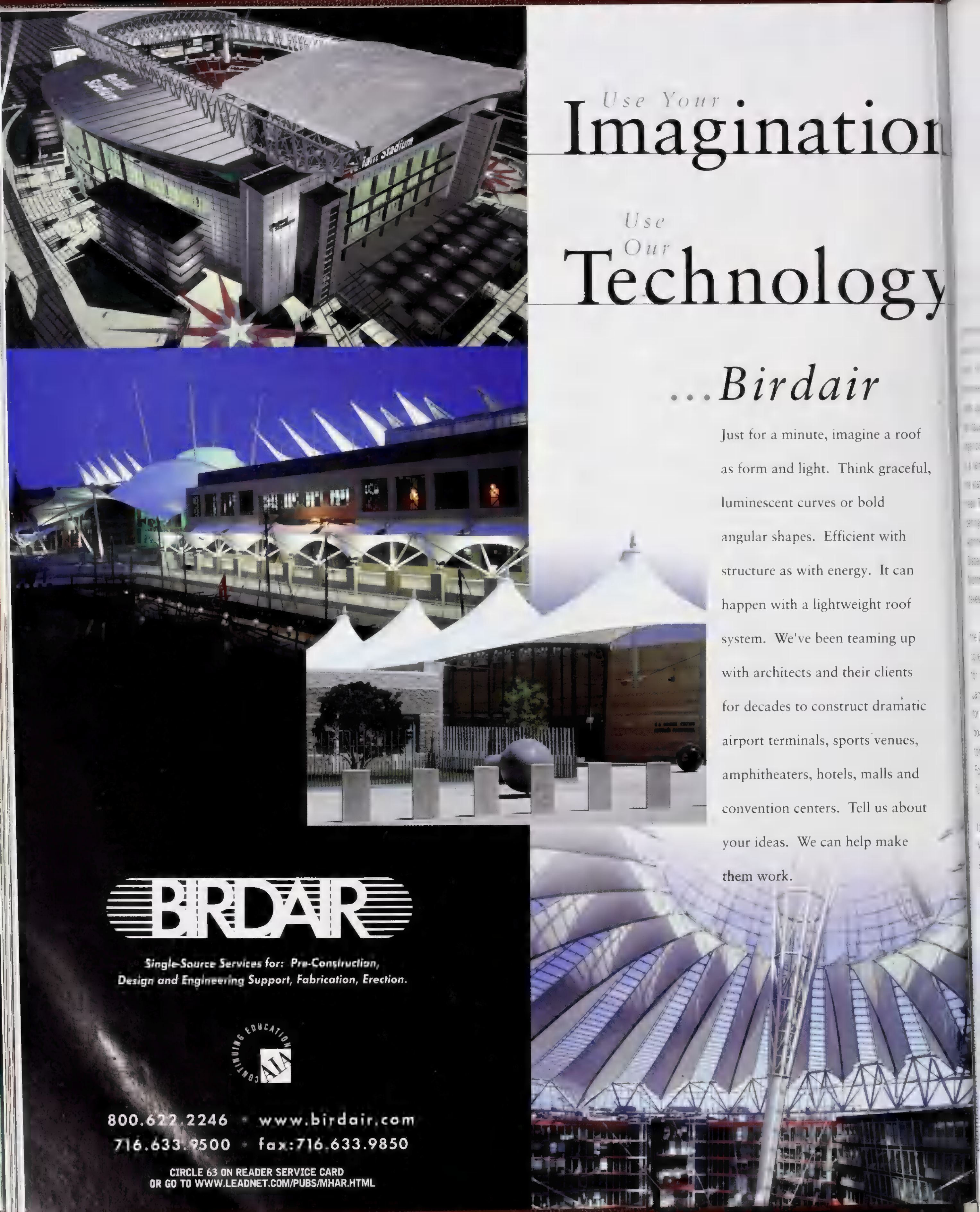
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Can a new director leave his own stamp at the CCA? Nicholas Olsberg gives it a try

Exhibitions

By Clifford A. Pearson

Sometimes it takes an insider to shake things up at a powerful institution. Familiar with the local terrain and missteps taken in the past, the inside guy—rather than the fresh new face—can maneuver through organizational minefields and head in a new direction without alienating the staffers whose support he'll need. That's what seems to be happening at the Canadian Centre for Architecture (CCA), as Nicholas Olsberg, a 13-year veteran of the Montreal museum and study center, takes control of the reins.

Olsberg came to the CCA from the Getty Center in 1989 as head of collections and became chief curator in 1991. In June 2001, Phyllis Lambert, the CCA's founding director and now its chairman of the board, named Olsberg interim director when Kurt W. Forster resigned. Four months later, she gave Olsberg full responsibilities as director.

Forster, who had been the founding director of the Getty Center for the History of Art and the Humanities from 1989 to 1998 and came to the CCA early in 1999 with an international reputation, was the guy who was supposed to lead the CCA into the post-Lambert era. He was the power player who was going to blaze a new path. It didn't happen. Serving as director for just two-and-a-half years, Forster was unable to shape an identity or direction for the CCA that was much different from what Lambert, the so-called "Joan of Architecture," had already established. Perhaps no one could have.

But in less than a year with Olsberg as director, the CCA has a fresh feel to it, a new sense of energy. This summer's exhibition, entitled *Laboratories*, gave some indication of what's going on up there in Montreal. Instead of examining the work of a famous dead European architect (think Mies or Aalto or Scarpa), *Laboratories* showcased the ideas of six young Montreal firms. And instead of being the result of years of scholarly research, it was a quick, almost visceral response to the sense of uncertainty left by the terrorist attacks of September 11, 2001.

Quick on his feet

In organizing *Laboratories*, Olsberg showed a degree of improvisation unusual for any museum, let alone one known for its research as much as its public offerings. Two months after the terrorist attacks, he scrambled the CCA's exhibition schedule and issued a call for proposals for installations that would turn the CCA's galleries into "a public square: a place for reflection, response, and the exchange of ideas." His challenge to architects was to "rethink the fundamentals of their discipline" and express new approaches in a time when "even the simplest role of a building is no longer so clear."

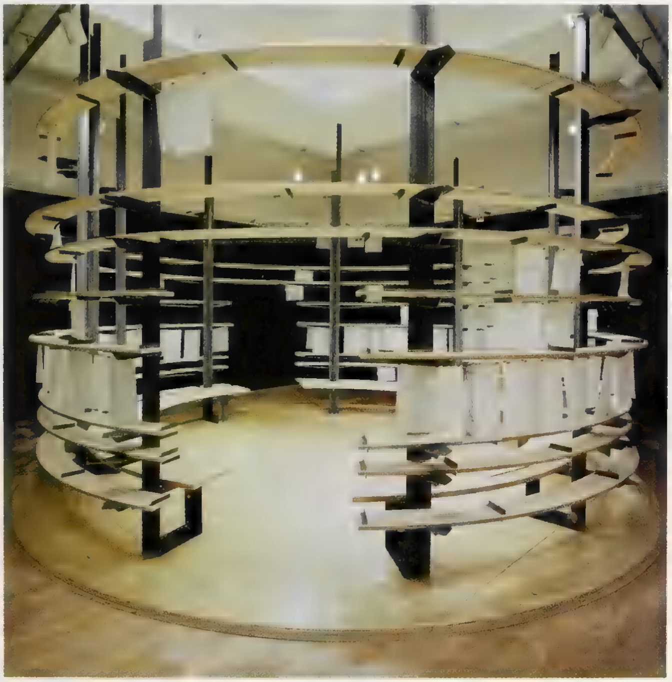
Envisioned as a year-long initiative—not just an exhibition—*Laboratories* brought together a jury to review the 103 submissions, then involved two outside curators, Mark Wigley from Columbia University and Frédéric Migayrou from the Pompidou Centre, and a panel of critics and artists to stir the pot of creative dialogue. During the run of the show, from April 18 to September 15, the CCA invited the public to register its opinions on paper, video, and electronic message boards. A symposium last month wrapped up the public effort, to be followed by a publication.

Although begun as a response to September 11, the six installations in *Laboratories* ended up dealing with the terrorist attacks only obliquely. No twisted or deconstructed forms, no twin towers, no evocations of violence or loss. Instead, the architects designed room-size constructions that visitors walk through, in, on, or around. Wall text at the start of the exhibition explains that the installations demonstrate "a return to basics, to a kind of Ground Zero condition" and "scrutinize the elemental function of walls, floors, surfaces, light, and sound."

Testing strategies

The six firms—Atelier Big City, Atelier BRAQ, Atelier in situ, Bosses Design, BUILD, and Pierre Thibault, Architect—test various spatial and material strategies, hence the term "laboratories." The installations invite visitors to walk between closely placed walls, sneak inside a trailer outfitted with a wavy floor covered in Astroturf, and push metal studs that are suspended on wire rather than anchored to floor or ceiling.

Thibault's piece, entitled



Pierre Thibault's piece in *Laboratories* displays notes left by visitors.

Writing Memory, makes the most direct connection with September 11, posting pages of paper with notes and graffiti left by visitors on topics such as shelter and design. The pieces of paper recall the "Missing" notices posted in New York by people searching for loved ones lost at the World Trade Center and carry emotions stirred up by the horrifying attacks. When the exhibition opened in April, reactions were quite raw, reports Olsberg. One person, for example, posted the message "There is no shelter." By August, the latest layer of writings was more philosophical. "Shelter is a better verb than it is a noun" read one note.

In-house provocateur

That the CCA could stir things up is a remarkable turn of events. "In the past, people used terms like 'quality,' 'perfection,' and 'sets the standard' to describe this place," says Olsberg. "But never 'provocation' or anything like that." Now Olsberg wants the CCA to generate ideas, not just preserve, examine, and exhibit them.

When Lambert founded the CCA in 1979, it was essentially a research center for scholars and didn't really open its doors wide until its Peter Rose–designed building debuted in 1989. Lambert purposefully eschewed the word "museum." Over time, though, exhibitions have assumed a greater role in the life of the institution. Olsberg plans to emphasize the public aspects of the CCA and expand its reach to more people. He speaks of a catchment area of 100 million people stretching from Washington, D.C., and New York to Chicago and up through Ontario and Quebec. Visits to the CCA peaked at about 70,000 a year in 1999 when a popular series of exhibitions entitled *The American Century* came to an end. (The series included exhibitions on Frank Lloyd Wright, Frederick Law Olmsted, Disney's theme parks, and the American lawn.)

Olsberg cautions about using visitation figures as benchmarks, however. "I'd rather have greater engagement by people. I want them not just to come to exhibitions but to bring their kids to educational programs, attend lectures and symposia, buy a book at the bookstore." He also refuses to treat exhibitions as stand-alone events. Instead, he sees them as part of a continuum that includes conferences, public discussions, and publications. "I don't think an exhibition can carry an idea all by itself."

Dynamic balance

Olsberg hopes to keep the twin functions of research and exhibition in a kind of dynamic balance, complementing but also competing with each other. For example, he has scholars sifting through the CCA's extensive archives on the design discourse of the 1970s and hopes this will result in an exhibition in 2007.

***Interchange* by Atelier Big City invites visitors to walk under and on top of a folded platform.**

A less sweeping but more immediate program is something Olsberg calls "object lessons," which would focus on particular works or collections in the CCA holdings. For example, the museum is organizing a small exhibition on Peter Eisenman's House IV, which will start at Yale in November and then travel to various architecture schools and university museums. The idea is to have each school assign the exhibition as a studio project and have students curate and design it. So the exhibition would morph and evolve from one location to another with only the original kit of parts staying the same. Olsberg hopes to do the same kind of exercise with works by Cedric Price, James Stirling, Aldo Rossi, and others in the CCA collections and to perhaps kick off the series with an exhibition at the CCA in the second half of 2003.

Atelier BRAQ's piece, *Typical Wall*, explores a key element of architecture.

Olsberg is also working on a series of large exhibitions that will examine particular cities at particular times: Montreal in the 1960s, Los Angeles in the golden age of the cinema (1920–60), and Algiers during its time as a French possession (1830–1962). He plans to start with the Montreal show in 2004, then do Los Angeles in the first half, and Algiers in the second half, of 2005.

Looking at distant corners

While the CCA has always been an international institution with international reach, it has paid scant attention to Asia, South America, and the third world in general. Olsberg wants to change that. "I'd love to see us have more impact in places like China, Indonesia, India, and Eastern Europe." Whether it is symposia, lectures, collaborative research, or exhibitions, he is beginning to explore possibilities in new parts of the globe for the CCA.

Although Lambert is still the dominating presence at the CCA, she and Olsberg are trying to reach beyond her sphere of influence. "We're looking for more outside support," states Olsberg. "We need more people to see the CCA as not just Phyllis but as *them*."

In the meanwhile, more people may see the CCA as not just Phyllis, but Nicholas, too. ■

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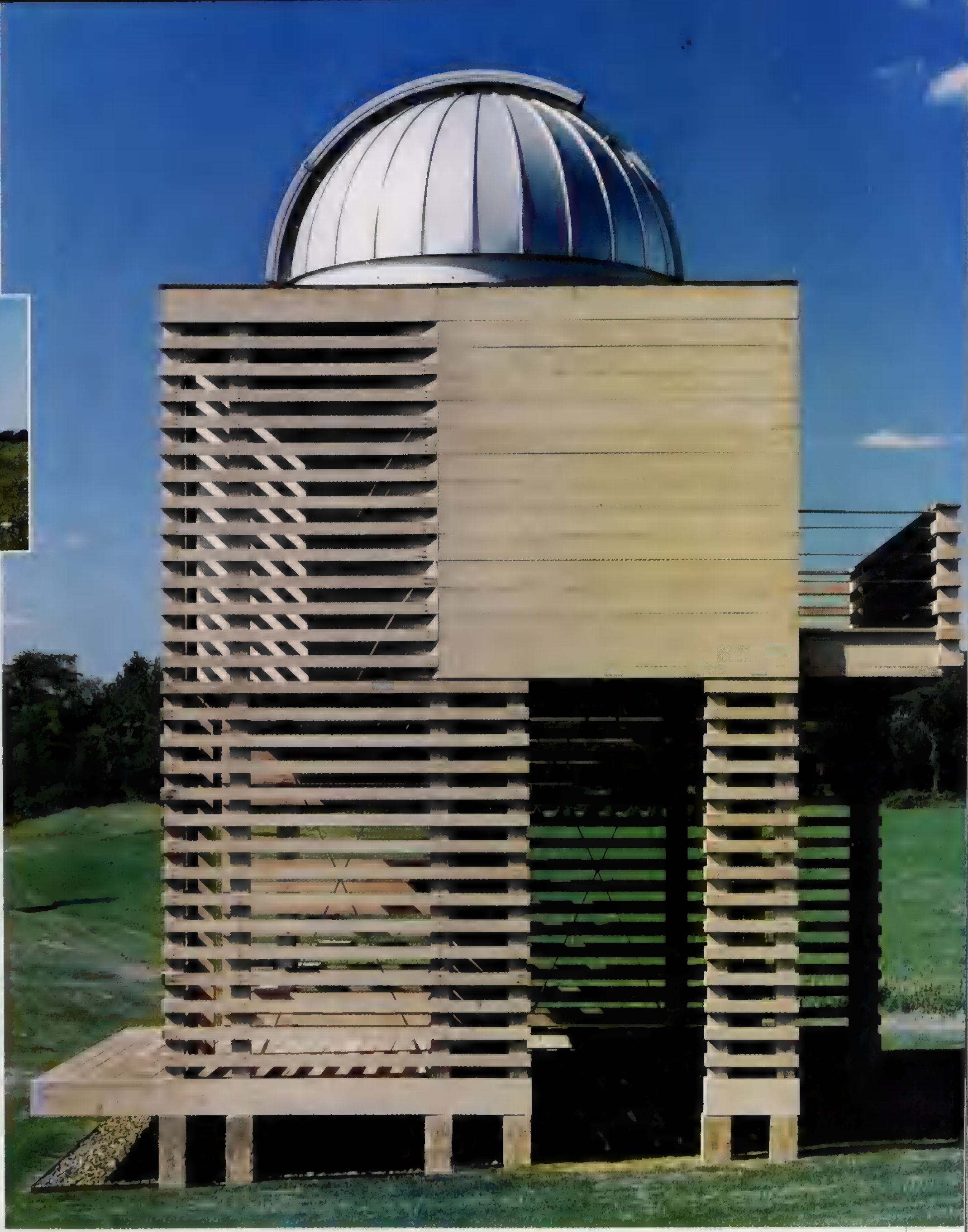
The slatted exterior gives the observatory structure a human scale, especially when viewed across the rolling landscape from the main house. It also gives it the feeling of a crisp, playful garden pavilion instead of a scientific structure.

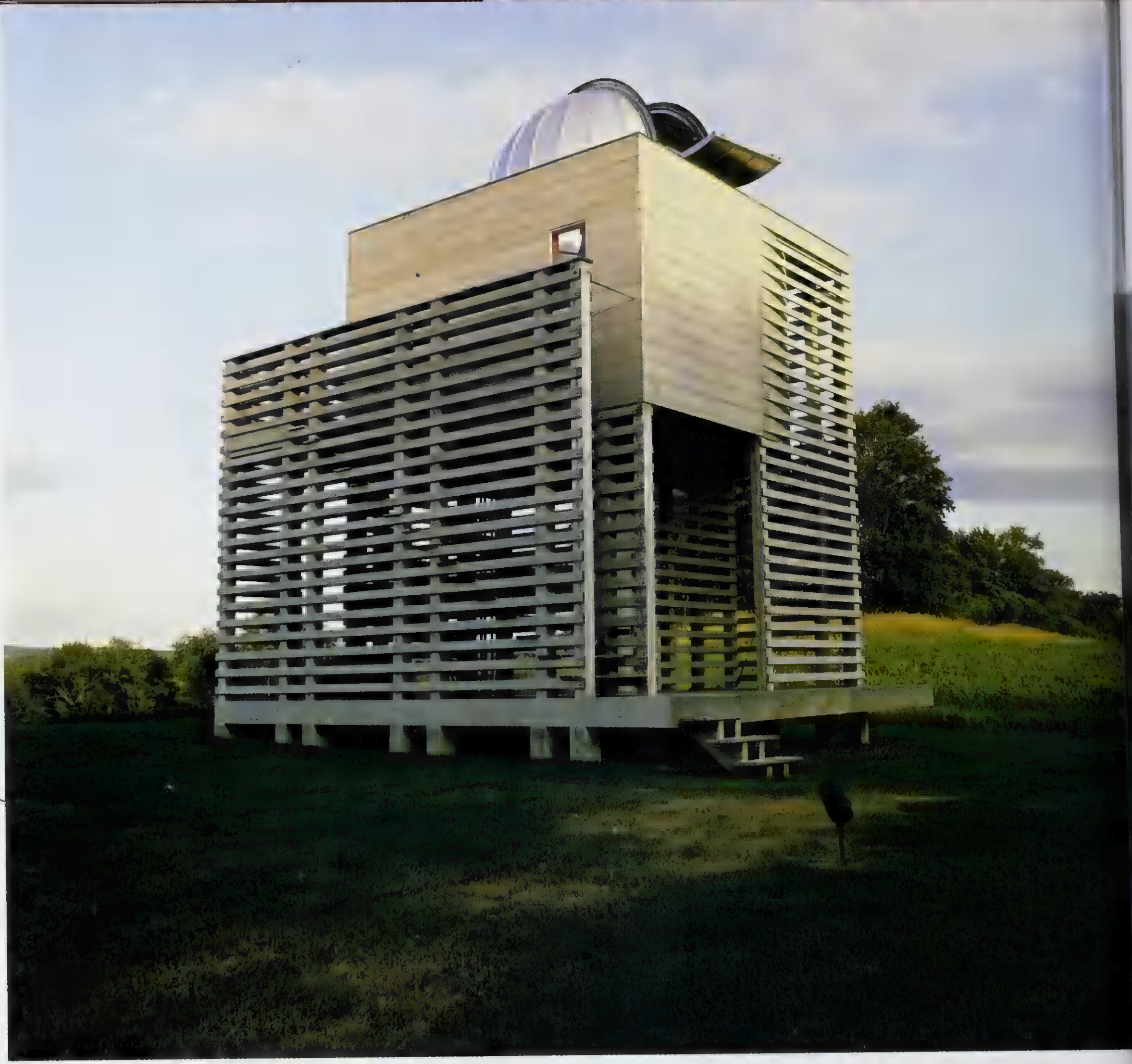


By Raul Barreneche

A solid little structure that makes architecture look easy

For most architects, the prospect of designing an observatory invariably sends their imagination back to the history books—to Boulée's supersize Cenotaph to Isaac Newton or Mendelsohn's Expressionistic Einstein Tower in Potsdam. Manhattan architect Wendy Evans Joseph admits she saw flashes of those icons as she began designing a small observatory for her stepson on the family retreat in Ghent, New York. But Joseph, a 12-year alumna of Pei Cobb Freed & Partners, was determined to put a Modernist spin on the observatory, which, with its requisite dome and typically solid masonry viewing room, inherently tends toward the Classical.

Making a Modern observatory wasn't simply a matter of dressing it in more pared-down garb. "The design is really driven by pretty specific technological requirements," explains Joseph. First and foremost among the technical mandates was establishing a structurally isolated, zero-movement support for the telescope. A 2-foot-diameter concrete pedestal anchored to bedrock creates a vibration-free base for the telescope, a computerized, 16-inch model



The viewing room (bottom) is sheathed in cedar siding and the tiny staircase and platform are wrapped with cedar posts and slats (right) spaced to echo the stair's riser dimensions.

that would pass muster with any university observatory. The surrounding viewing room, structurally independent of the concrete column, is enclosed by a cedar-post structure and lined inside with maple plywood walls and sustainably grown ipé floors. (Joseph likens the structural configuration to a lollipop.) A retractable, 10-foot-6-inch-diameter dome crowns the little room, which, atypically, has a small window fitted with a blackout shade to allow some air into the stargazer's perch. Mechanical heating and cooling is another no-no in observatory design: HVAC vibrations disrupt motion-free stargazing, and heat currents cloud the view through the telescope.

The dome dictated the overall proportion of the little building—"the new Modulor," jokes Joseph. She thrust the solid viewing room up a full level, creating a ground-level platform around the concrete lollipop stick. The slatted skin gives the structure a human scale, especially when viewed across the rolling landscape from the main house. It also lets the observatory breathe, at least visually, and gives it the feeling of a crisp, playful garden pavilion instead of a leaden scientific structure.

Though the project was built for a high school hobbyist, Joseph's execution is anything but amateur. The architect meticulously detailed every connection and mitered all the corners. "If you don't do that, you could have tremendous amounts of vibration," explains Joseph. "It requires a lot of precision." She says local contractor Jim Romanchuk's craft was "over the top," but necessarily precise. Given Joseph's tutelage under I.M. Pei, such precision seems driven by much more than just technical mandates. ■

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Ethics and the Architect

By John T. Matteson and Mary Z. Donovan

A host of recent books and symposia on the relationship between ethics and architecture suggests that the profession as a whole is moving toward new and important considerations of what it means, in a moral sense, to be an architect. Architects studying ethics have been scouring the writings and teachings of theologians, critics, and philosophers, such as Thomas Aquinas, John Ruskin, and Martin Heidegger, for insight and direction.

This movement has acquired further momentum as, in recent months, Americans have become increasingly conscious of professional misconduct of all kinds. During the past year alone we have been bombarded with revelations that corporate executives and their auditors have concealed huge losses, posted illusory profits, and falsified the value of their corporations' assets while engaging in insider trading and exercising millions of dollars worth of stock options. As a result, some of yesterday's blue chips are today's cat-box liners. Billions of dollars have evaporated from 401(k) plans, retirement funds, and the pockets of investors. Those who perpetrated these crimes are intelligent professionals, well schooled in their ethical responsibilities toward others. Their recklessness betrayed millions of people.

In the wake of September 11, 2001, architects and engineers have also felt the gaze of the public settle upon them, but for different reasons. People who may not comprehend how miraculous it is that a structure could have survived the impact of a jet for any length of time are asking tough questions. Did compromises made during the design and construction of the World Trade Center towers allow them to fail too easily? Should the sprayed-on fireproofing have been more resistant to impact? Were the bolted connections that fastened the floor-framing systems to the core walls inadequate? Were exit-stair towers too close together? Sprinkler risers too easily destroyed? More broadly, has the pressure to build cheaply and quickly caused dangerous trade-offs in our building codes?

The loss of public confidence in the ethics of professionals merits our careful attention because professions that are perceived to be untrustworthy and neglectful of the public good inevitably find themselves subject to severe oversight and regulation. Accounting and banking laws are already starting to undergo legislative reform, and no doubt some of those involved in this recent wave of white-collar crime will be going to prison. For architects, a loss of the public's trust might cause building codes to become more stringent. At its most extreme, a failure of confidence might lead the public to question whether architects are responsible or knowledgeable enough to design with the measure of freedom the profession has always enjoyed, or whether they can be trusted to use it for the public good. In an age when integrity is so quick to fall under suspicion, it is becoming more important than ever that architects think about their work in light of its ethical ramifications.

To whom shall we be true?

Of course, many of the factors that make the architect's job so ethically challenging have always been with us, and they are unlikely ever to go away. The most significant of these springs from traditional notions of what it means to be a professional. Obviously, being a professional should signify more than acquiring a body of knowledge or passing an exam. In addition, professional architects must assume the legal responsibility to protect the public's health, safety, and welfare. In the bargain, they take on an obligation to use their knowledge to serve people.

In the individual case, the architect who serves only the client appears to be doing the right thing. Yet this appearance may mask troubling ethical questions. Serving the client may well mean, for example, that a person will be asked to design 100 units of tract housing in a landslide-prone area. This creates a dilemma for the architect, because the social mathematics of self-interest seldom add up: The system in which the architect fulfills the desires of the client does not always produce the best result for everyone else.

Should an architect execute work that will be harmful to the environment and aesthetically offensive, or hand pink slips to his or her staff members? One wonders whether staying in business must come at the expense of doing what is responsible to the public in a larger sense.

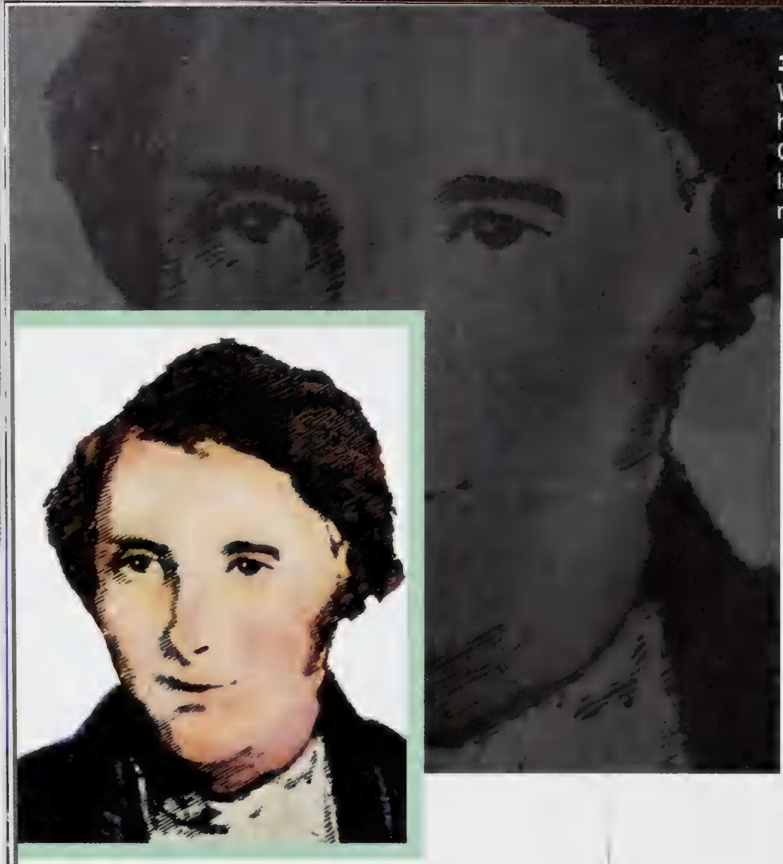
Where we've come from

In a larger context, much of what causes this conflict arises from a dilemma with which America has been wrestling since the New Deal: Are we a nation of boisterously competitive and individualistic people, or an immense community working to achieve a generalized social will under the guidance of centralized authority? Do we depend on an authority we empower to decide what's right, and to enforce it, or do we rely on the individual to act ethically?

RESOLVING THE ARCHITECT'S DILEMMA:

HOW WE REPRESENT THE INTERESTS OF OUR CLIENTS WITHOUT BETRAYING OUR OWN.

1274 : Thomas Aquinas dies, leaving unfinished his *Summa Theologica*, in which he suggested that pure technical command of one's craft was not sufficient; one must also love one's craft and the community where one works and builds. Aquinas believed that loving one's work is essential to a job well done and a life well lived.



1853: In *The Stones of Venice*, John Ruskin publishes his essay "The Nature of Gothic," denouncing division of labor and exhorting architects not to sacrifice humanity in the name of perfection. He argued that the convenience, beauty, and economy that had been made possible by the machine had come "only by the degradation of the workman."

In general, Americans do not really answer this question. We tend instead to pursue one of the two positions headlong until finally, aghast at the errors of our single-mindedness, we dash back in the opposite direction.

For more than three decades after World War II, our faith in higher authority held sway. We trusted government to contain Communism and end segregation. The public trusted architects to design housing for the poor and rebuild our cities. However, with the Vietnam debacle, the destruction of the Pruitt Igoe, and the failures of the welfare system, urban renewal, and many other things, people lost faith in the idea that one central authority, or profession, can always be depended upon to know and do what is best for all.

You can't legislate virtue

Until the 1970s, the AIA had tried for almost 100 years to enforce its own model of ethical behavior. The institute did this by using its code of professional conduct to keep architects from bidding against each other to get work. The thinking was that if competition among architects on the basis of fees was discouraged, competition between architects would not vanish; rather, it would be shifted away from the bottom line and into the realm of quality. Instead, the AIA found itself entangled in years of disputes over antitrust law. Starting in the early 1970s, under pressure from the United States Department of Justice, the institute entered into a series of consent decrees intended to prevent noncompetitive practices, including the setting of fee schedules. Ironically, the AIA was fighting to keep its own self-imposed regulations, in its view, to protect its ethical standards.

The Justice Department didn't see it that way. Its understanding of the case assumed that the primary arena in which architects compete is on the amount of their fees. If all of the members of an AIA chapter agreed to charge the same amount to design a building, they could decide among themselves to set that price as high as they wished. A consumer could either pay the going price, try to do business outside the organization, or do without a building.

The reasoning of the Justice Department was flawed in one respect, and that is that there are secondary "consumers" of a design project—the people who live near or work in a building and must endure its aesthetics or, in a more global sense, the environmental consequences that result from its construction. A client who is going to construct a building might get a good price because architects had cut their costs to the bone to get the job. However, the process seems self-defeating. What interest does an architect, who now stands to make little money on the job, have in designing a building that will be environmentally responsible and appealing to its neighbors? Only the interest that the architect chooses to assume.

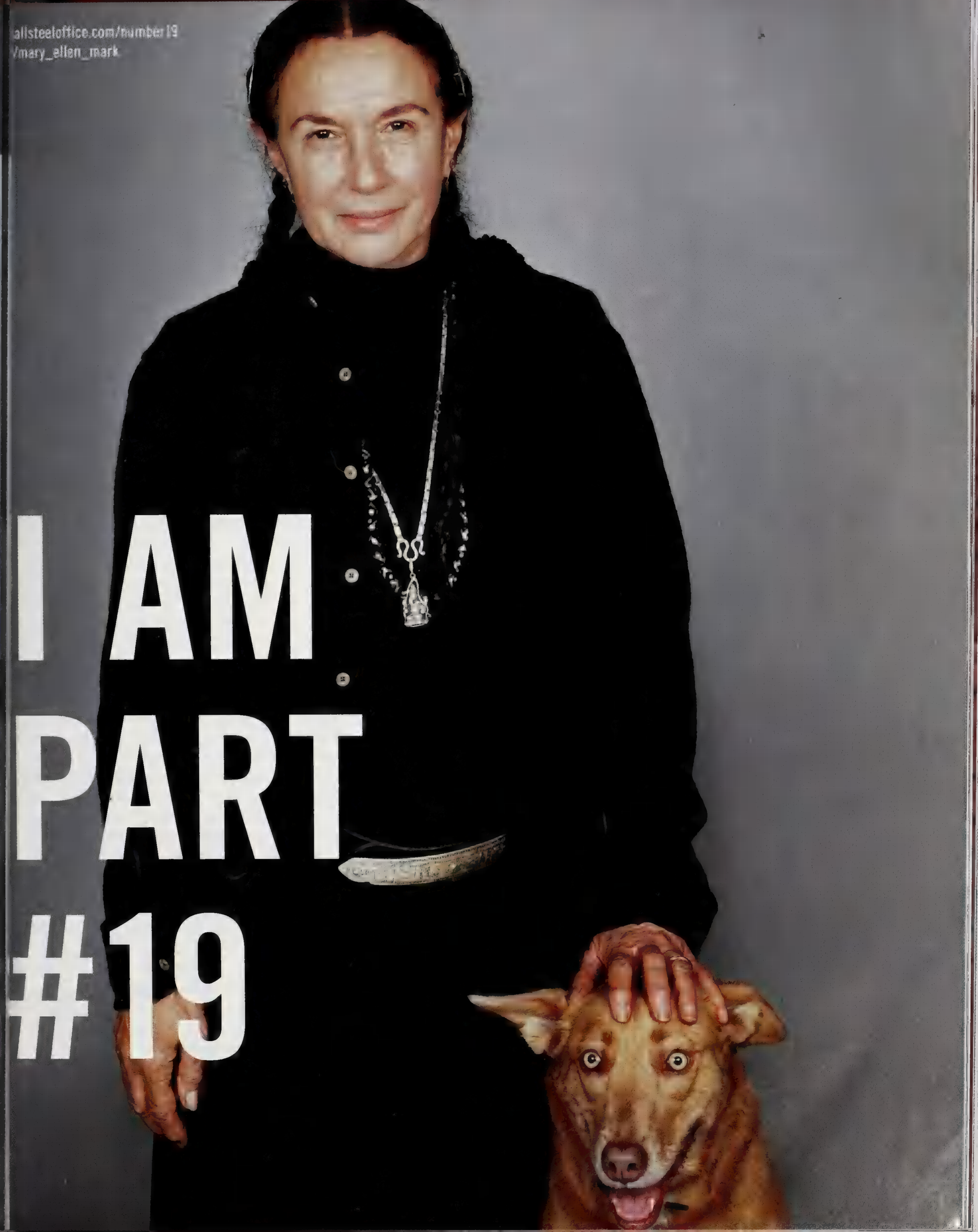
On the other hand, the AIA's belief that it could make its members act ethically by making them conform to fee schedules was naive. The institute's rules were never enforceable and did not ensure that those who adhered to them were any better at designing buildings than the architects who didn't. Fee regulation didn't begin to address many of the ethical dilemmas the profession faced in the past, and these have only become more complex. Globalization brings up a whole new set of issues. For example, should an architect specify exotic hardwoods that can be harvested only if irreplaceable habitats are destroyed? Should an architect turn a blind eye to the importation of building materials made in countries where they can be produced cheaply because environmental standards are lax? As the AIA learned, architects will decide for themselves what their ethics will be and must impose these standards upon themselves before the public can benefit from them.

Where we go from here

What can an architect begin to do to make his own position more ethically tenable? Perhaps more than the members of any other profession, it is given to architects to take an imagined ideal and to bring it forcefully into the world. But they have the potential to change reality with more than steel, glass, and brick. Architects possess the knowledge to speak and act as leaders of communities and as shapers of artistic understanding. This authority exists, however, only insofar as architects see themselves, and are seen by the public, as belonging to a learned profession whose commitment to society extends beyond doing a job.

THE AIA'S IDEA THAT RULES COULD MAKE AIA MEMBERS ACT ETHICALLY WAS NAIVE.

Many of the issues of character and social relevance that concern the modern architect were also present in the mind of a medieval churchman. Better than anyone who preceded him in the Western tradition, St. Thomas Aquinas perceived the relationship between ethical integrity and the ability to create a strong and beautiful physical artifact. Craftsmanship and citizenship were so closely allied in Aquinas's thinking that he used the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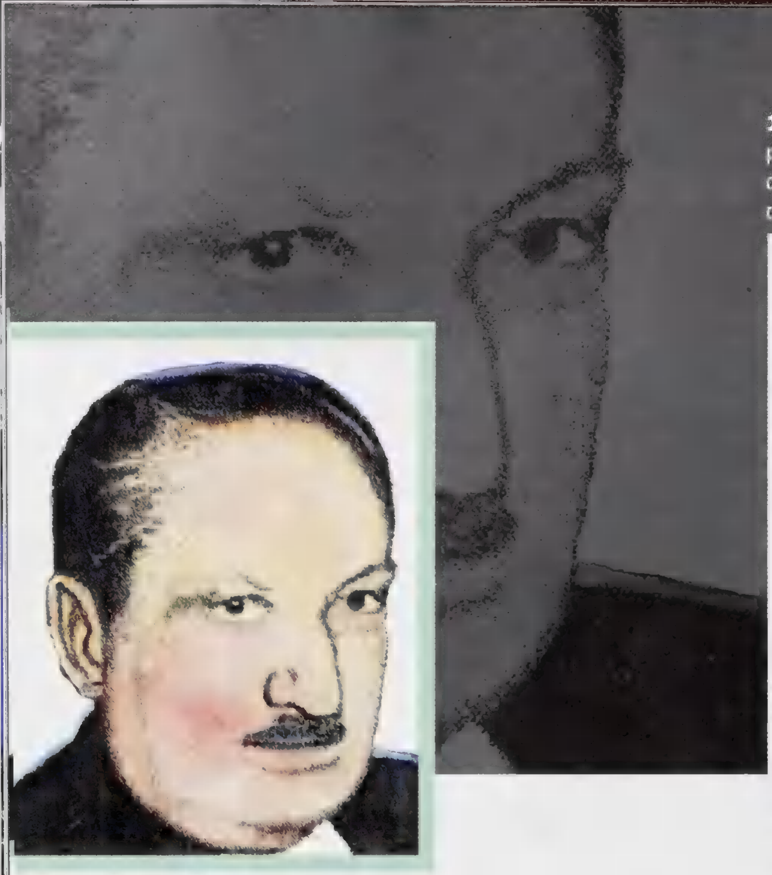


1951. Martin Heidegger proclaims, "Only if we are capable of dwelling, only then can we build."

one in an analogy to describe the other. He wrote: "A craftsman will not act well unless he acquires a love for the good pursued in the exercise of his craft; so that … to be a good citizen, you must love the good of your city." He also observed, "Having a craftsman's skill doesn't make one good. … Any actual doing of good depends on the doer's having a good will."

Aquinas's ideal craftsman combined a mastery of professional skill with a love of the community. The point cannot be emphasized too strongly: Architects are unique in the way they bring a knowledge of hard science, aesthetics, and psychology to their work. They have contributions to make to the spiritual and sensory wealth of the community that literally no one else can offer. Rather than allowing price to become the sole criterion of competition, the architect must educate the client and the greater public as to the value of careful, time-consuming, and sometimes more costly, design.

Although Aquinas did not refer specifically to the craft of architecture, the logical implications of his ideas speak plainly to the architect, whose design skills so directly affect people and their environment that exercising them is virtually a form of citizenship. Aquinas suggested that pure technical command of one's craft was not sufficient; one must also love one's craft and the community where one works and builds. He was not suggesting, à la John Lennon, that all you need is love. He was, however, insisting that loving one's work is essential to a job well done and a life well lived. "Truth is one," Aquinas wrote. "Hence, truth according to science and truth according to faith must coincide." While his statement may not have been literally correct, it still points toward an important precept: In the building of a good building, technical prowess and spiritual inspiration almost necessarily walk hand in hand. For Aquinas, professionalism did not isolate craftspeople from the community; rather, the best craftspeople were drawn by their work toward the very center of the community, and their work became inseparable from the lives and aspirations of the people. Through the hands of craftspeople, the essence of divinity became present in the world.

ARCHITECTS CONTRIBUTE TO THE COMMUNITY IN WAYS NO ONE ELSE CAN.

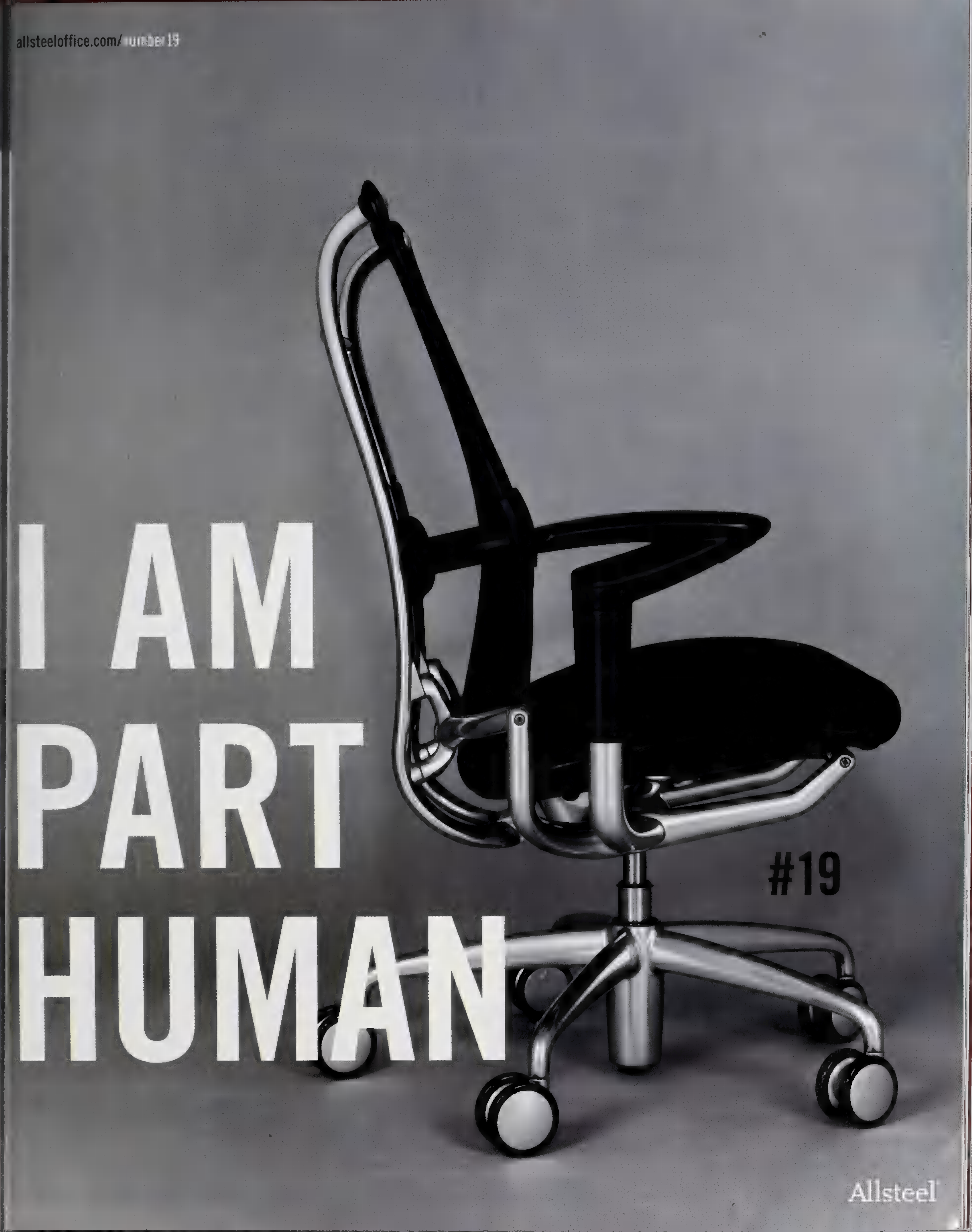
Ruskin and professional competence in the digital age

Recently, many experienced architects have expressed concern that crucial aspects of the competency that architects should gain during training have been degenerating. They worry that graduates of architecture schools seem to be losing their grip on how buildings are constructed. Their drawings look so good in their digitally rendered perfection that the mechanics don't seem to matter. In an interview that appeared in RECORD last month [September 2002, page 100] Richard Meier, FAIA, said, "… many people, especially those who come out of school today, show a lack of understanding of scale. Often someone will say, 'I'll measure it.' But, you shouldn't have to measure it. You should know what you're drawing."

Unquestionably, construction documents can be produced more efficiently and accurately using CAD, and there is no question that it has enabled architects to design things that would have been impossible using pencil and paper. But, should the public feel it can trust those who do not understand such basics as scale, how and why buildings stand, and what makes them comfortable and practical, to comprehend the intricacies of physics upon which the life-safety codes are based? In the 1850s, John Ruskin, in *The Stones of Venice*, lamented the industrial age's obsession with standardization and technical precision. He could have been talking about the effects of CAD and digital rendering on young architects today when he argued that the convenience, beauty, and economy that had been made possible by the machine had come "only by the degradation of the workman," who was no longer able to exercise judgment in the production process.

Ruskin deplored the fact that in the machine age mental work was becoming more and more distant from its physical counterpart, so that the person who produced the idea took no active part in its realization: "We are always in these days endeavoring to separate [body from intellect]; we want one man to be always thinking and another to be always working … whereas the worker ought often to be thinking, and the thinker often to be working … It is only by labour that thought can be made healthy, and only by thought that labour can be made happy." Back then, Ruskin was concerned about the alienation of the laborer. He could not have predicted that something like a computer would one day begin to usurp the more intellectual work of design itself. But it seems to many that it can, as the gap between an idealized image and the work that makes it real widens.

Like Aquinas, Ruskin argued that a good craftsperson is improved by upholding the public's trust. Just as importantly, Ruskin saw the architect as performing the essential function of reminding people of their place in relation to history. He said of architecture, "We may live without her, and worship without her, but we cannot remember without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her. … There are but two strong conquerors of the forgetfulness of men, Poetry and Architecture." More than any other kind of artist, the architect has the ability to create durable forms for preserving history and memory.

Nearer to our own time, Martin Heidegger wrote, "The nature of building is letting dwell. … Only if we are capable of dwelling, only then can we build." A superb discussion of Heidegger's approach to architecture can be found in Karsten Harries's *The Ethical Function of Architecture* (MIT Press, 1998). What Heidegger argued was that in order to create a space that is conducive to a sense of comfort and belonging, one must first know what it is to have those feelings.

Aquinas, Ruskin, and Heidegger all advised us to create connections with community, with history, and to understand the processes of construction and science that support architecture. Architects who mediate between tradition and innovation, as well as between the client and the community, may quickly discover that mediation requires moderation. The architect who designs only for the sake of art and tradition courts financial ruin; the designer who serves the client and no other interest risks a spiritually empty career. Aristotle's idea was that the pursuit of any single virtue or value to the exclusion of all others leads directly into vice. Not surprisingly, when Horace summed up Aristotle's doctrine of moderation, he used architectural metaphors: "Whoever cultivates the Golden Mean avoids both the poverty of a hovel and the envy of a palace." The golden mean between the values of the market and the spirit will vary with the situation and personality of each designer. But an ideal balance will never be reached unless the architect confronts the moral ambiguities of the profession and strives to give each its appropriate weight. These are, of course, very personal choices.

No one can dictate to the architect what jobs to pursue or, within the limits of reason and safety, how to do them. Nonetheless, the courage and decency of an architect who works to protect the environment, who designs dignified public housing, or who contributes gratuitous beauty to the human landscape, will always deserve honor. Ernest Boyer and Lee D. Mitgang's 1996 book entitled *Building Community: A New Future for Architecture Education and Practice* is a superbly thoughtful study of education and community outreach as they relate to architectural ethics.

BALANCE CAN ONLY BE ACHIEVED BY CONFRONTING THE MORAL AMBIGUITIES.

It's not about the money

No matter what is said or written about ethics and self-respect in the profession, the dialogue inevitably comes back to money. How can architects promote quality, creativity, and respect for the environment without placing themselves at a competitive disadvantage? Whatever course is to be followed, one point seems settled: Insofar as architects accept the assessments of the marketplace as the sole arbiter of the value of their work, they will judge themselves too harshly. First, this "secondary consumer" of design services seldom appreciates the value of the uplifting experience of beholding a beautiful structure. Second, and just as importantly, they will not take into account the remarkable range of expertise that architects have labored to obtain and that defy all efforts to quantify: the knowledge of science, aesthetics, sociology, and above all the human spirit that uniquely combine to make a designer of fine buildings.

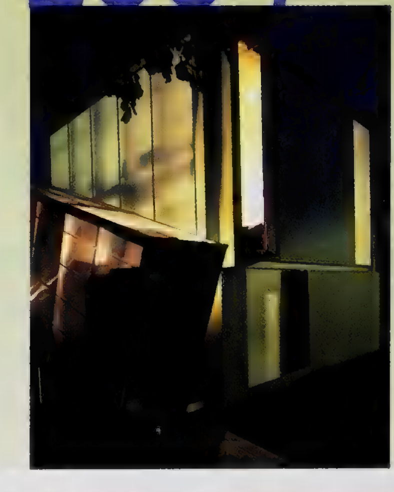
Thankfully, most architects do strive always to retain their sense of social purpose and to speak with authority to the soul of the culture. In the trenches, it is often hard to remember that to serve one's public with the utmost heart and skill the architect must avoid the limitations of orthodox thinking as well as being restricted by relentlessly utilitarian economics. Both literally and figuratively, ethical architects think outside the box. Those who do not will bequeath to the future empty shells, where the dreams and aspirations of culture will be buried. ■

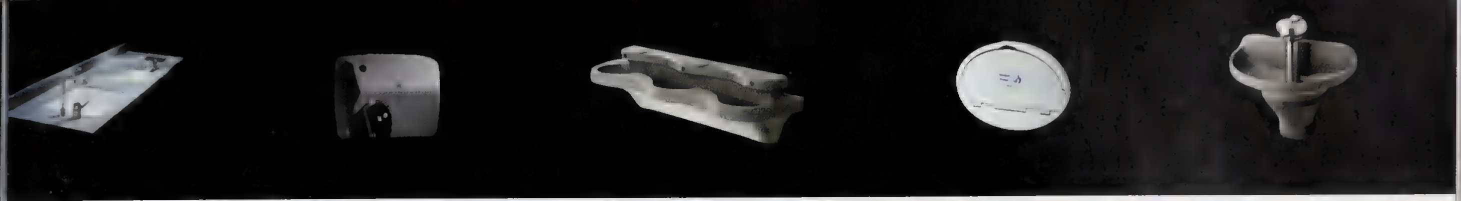
John Matteson is a graduate of Harvard Law School and holds a Ph.D. from Columbia University's Department of English and Comparative Literature. He is an assistant professor at John Jay College in New York City. Mary Zaboglio Donovan has an M.A. in education from the University of Wisconsin and a B.S. in architecture from The City College of New York. She organized the Ethics in Architecture conference held for the past two years by the Cathedral Congregation of St. Xavier at the cathedral of St. John the Divine in New York City.

ARCHITECTURAL RECORD CALL FOR ENTRIES

RECORD HOUSES 2003

The editors of ARCHITECTURAL RECORD announce the 48th annual RECORD HOUSES awards program. This program is open to any registered architect. Of particular interest are projects that incorporate innovative programs, building technology, and use of materials. Submissions must be postmarked no later than November 4, 2002. Winning entries will be featured in the 2003 RECORD HOUSES. See submission form in this issue, page 272.





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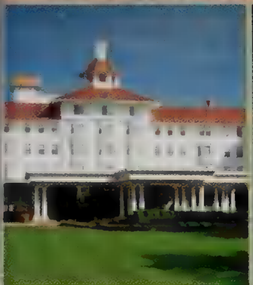

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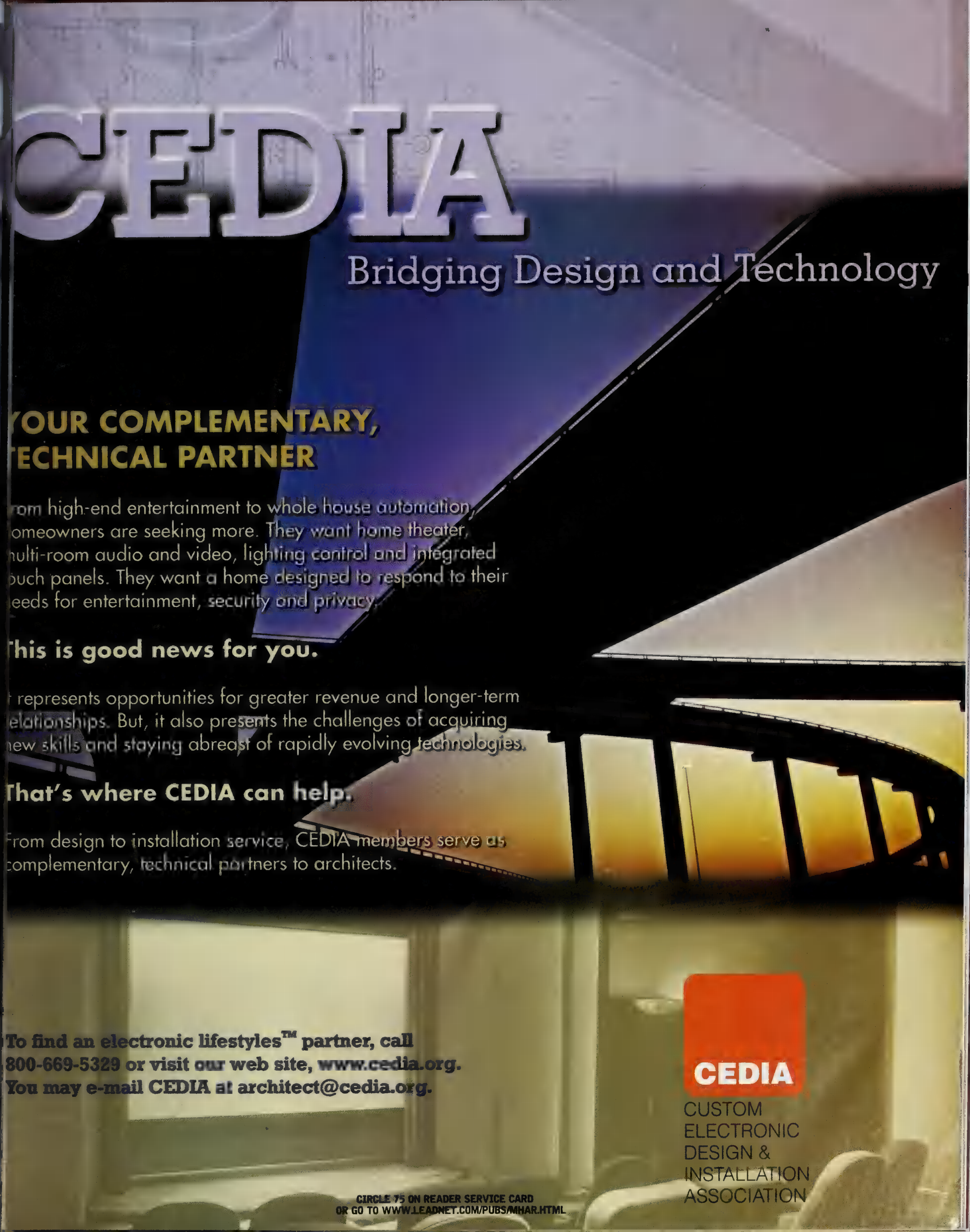

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Small, medium, large

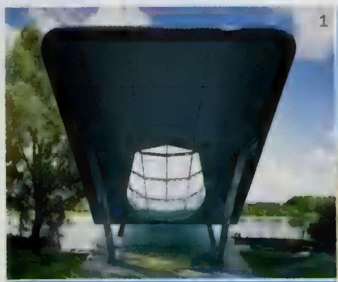
Small is beautiful. In formal polls and in informal chats, architects and other readers consistently ask us to publish little work, if judged by objective criteria—budget, square footage, or obvious scope. Consistently, small projects attract us in print. First, they fit handily within the magazine's format. In a few pages we can apprehend their context and accomplishment. They do not overly tax our understanding, as more complex programs might, allowing us to grasp their essence. In character, they recall the experimental nature of student work, associated with a period of creativity in our own professional lives.

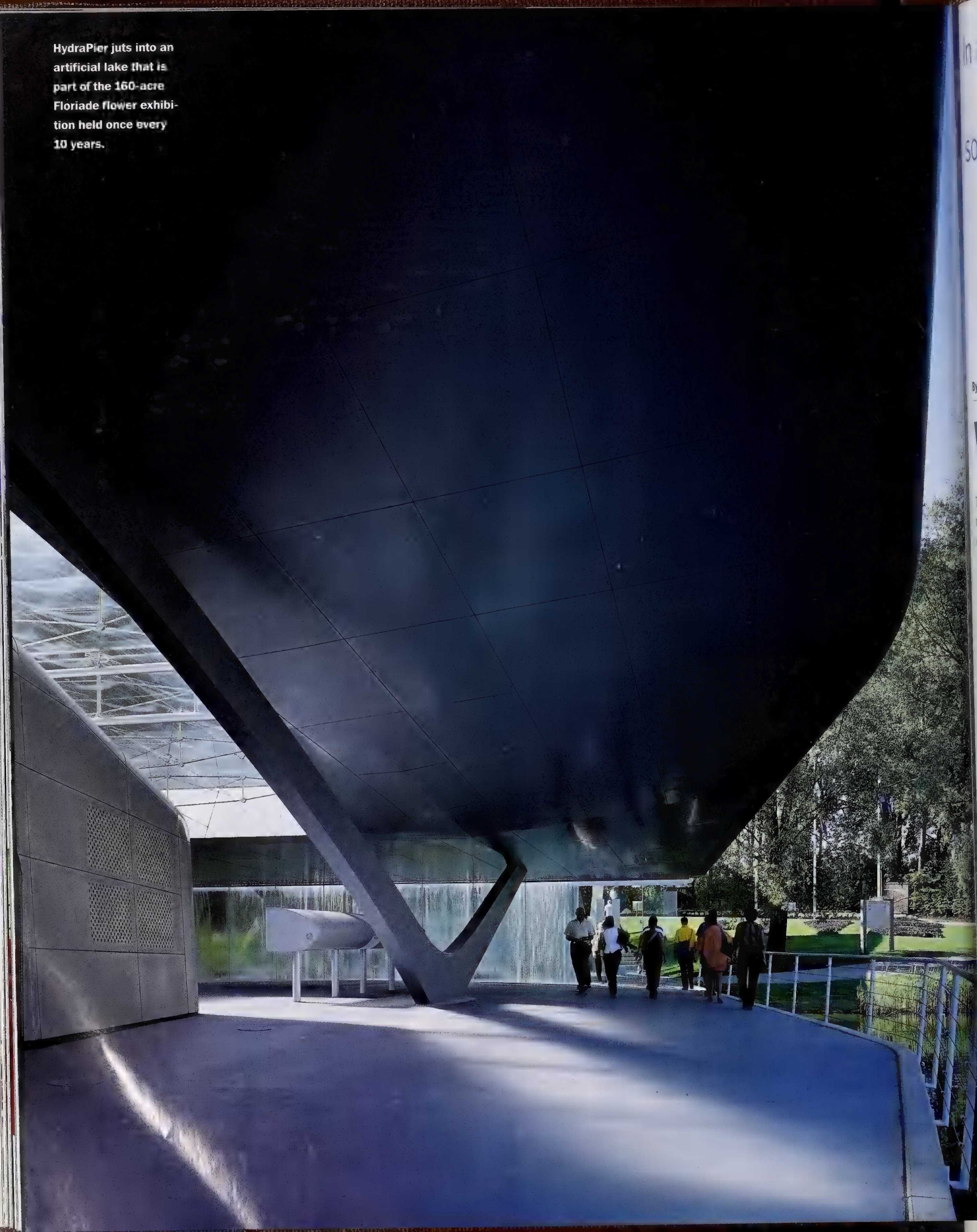
This month, ARCHITECTURAL RECORD explores scale, from little to big. Asymptote, in its pavilion constructed for an international exposition in the Netherlands, proves that a project need not be overly large to be ambitious. Three other, distinctly American examples are featured from across this country: a camp for troubled young people set in the vast peace of the American West, designed by Charles Rose; Samuel Anderson's laboratory for the demanding task of paper conservation placed in the attic of a New York City landmark; and a metal shop for a crafts school in rural North Carolina, designed by Frank Harmon, a native son. In all four, small equates to approachable—a personality trait that imbues both the more rustic and the futuristic architectural essays.

The real world, however, includes tonal blending. This month's issue offers an example from Manchester, a medium-size city that employs architecture as an urban magnet in its ambitious new war museum, designed by Daniel Libeskind. In Germany, the Munich Reinsurance Company, by Baumschlager + Eberle, deploys sophisticated systems and artful displays of chromatic light to enrich what could have been a mundane office building.

In October, RECORD speaks in a polyglot dialect of small, medium, and large scales—as does our professional world of clients, contracts, and buildings. Real architecture engages all three.
Robert Ivy, FAIA

1. **HydraPier** (Asymptote)
2. **Camp Paintrock** (Charles Rose)
3. **Imperial War Museum** (Daniel Libeskind)
4. **Thaw Conservation Center** (Samuel Anderson)
5. **Iron Studio** (Frank Harmon)
6. **Munich Re** (Baumschlager + Eberle)

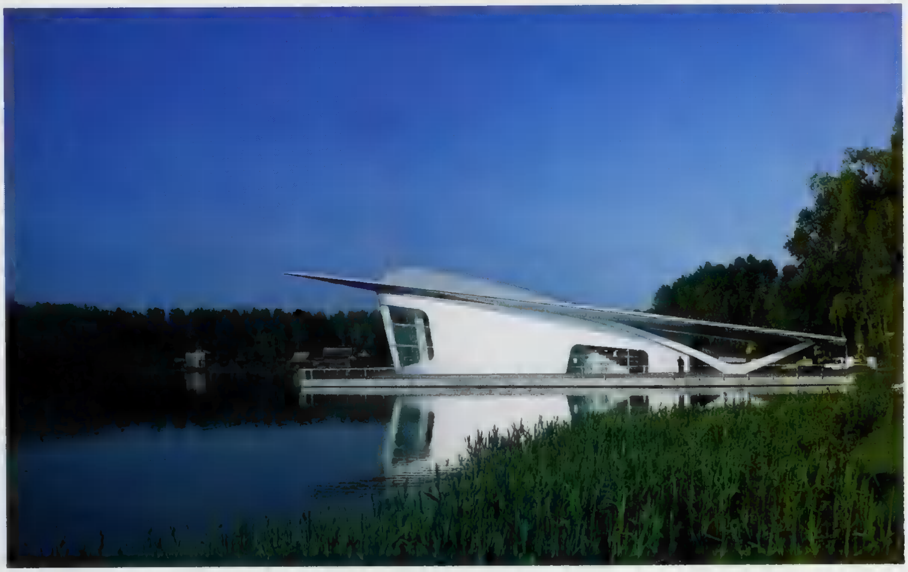




HydraPier juts into an artificial lake that is part of the 160-acre Floriade flower exhibition held once every 10 years.

In an artificial landscape near Schiphol Airport, **Asymptote** helps put a place on the map with a soaring pavilion called **HYDRAPIER**

By Tracy Metz



Water and land, man and nature—these are the protagonists in Holland's never-ending struggle and romance with its landscape. They also are the elements that shape the architecture of HydraPier, an exhibition pavilion designed by the New York firm Asymptote for Haarlemmermeer, the area south of Amsterdam that includes Schiphol Airport.

The architectural highlight of this year's Floriade (a major horticultural event that travels to a different Dutch town once a decade), HydraPier will assume a new role as a municipal meeting hall when the flower show ends. Although its future program is not completely determined, its client is already holding meetings there between municipal officials and guests such as architects.

Like much of Holland, Haarlemmermeer was once underwater, and its hosting of this year's Floriade coincides with the 150th anniversary of the reclamation project that created the land. Young by European standards, Haarlemmermeer lacks the grand monuments of older towns with their medieval churches and impressive palaces. So the municipality has been busy lately building new attractions, even hiring Santiago Calatrava to design three bridges. In commissioning a building for the Floriade, Haarlemmermeer was looking for more than a temporary pavilion; it wanted a modern-day landmark.

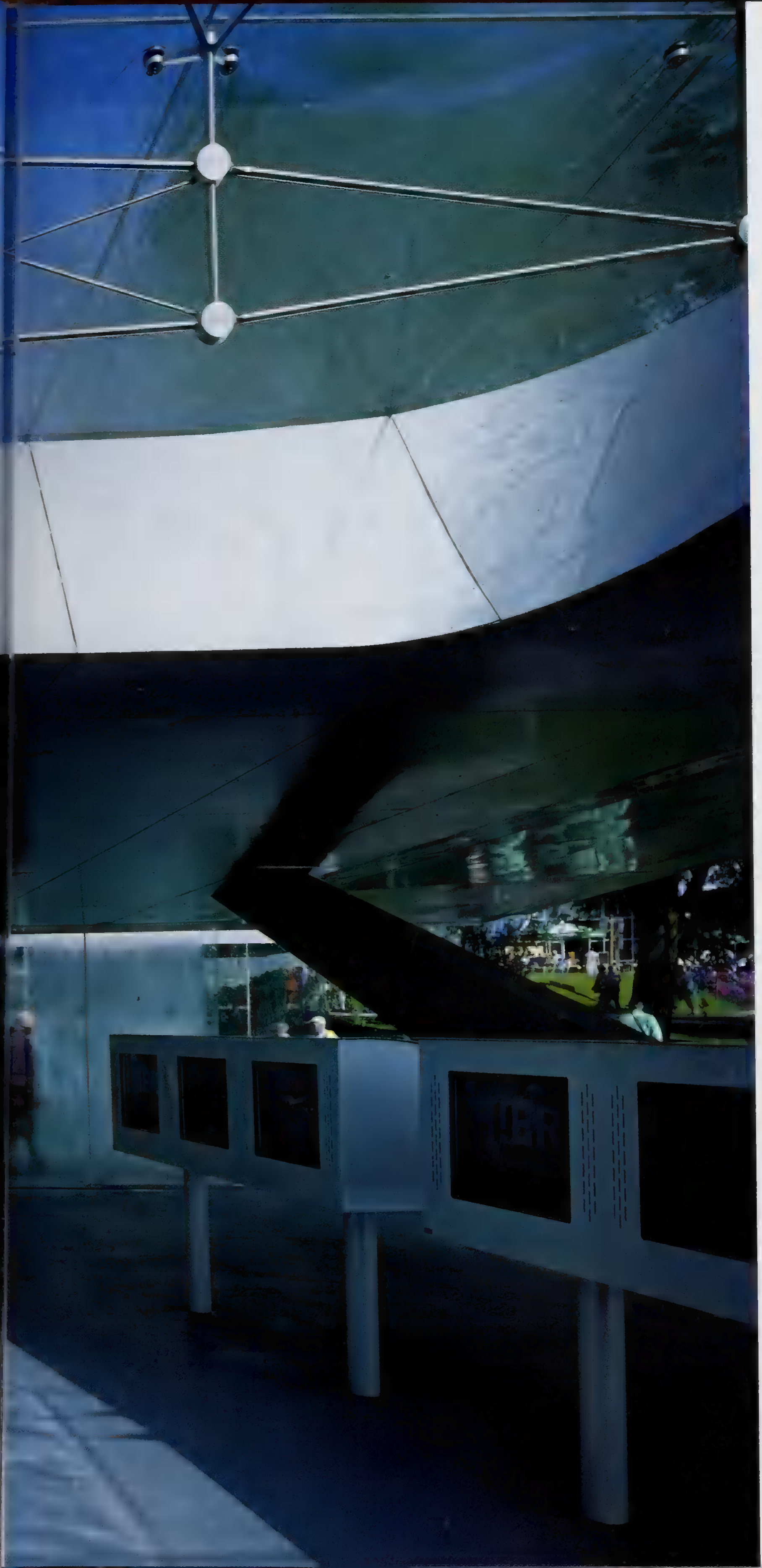
Hani Rashid and Lise Anne Couture, the husband-and-wife principals of Asymptote, took the history and character of Haarlemmermeer as the starting point for their design, drawing particular inspiration from the presence of Schiphol Airport. As a result, HydraPier perches on the edge of a man-made lake as if it were about to take flight. Essentially a hinged double roof with a pavilion tucked underneath, the building offers exhibition space both indoors and out. Rashid says the evocative shape refers obliquely to the planes flying overhead. Indeed, the architect refers to the roofs as "wings" and the pavilion as a "fuselage." The landside roof slopes in one direction to welcome visitors and rests on a pair of triangular supports, while the lakeside roof slopes in the other direction and sits on a second pair of supports. Where the two roofs meet, the architects inserted a walkway defined on either side by a glass wall animated by a sheet of sliding water, thereby creating a "water tunnel."

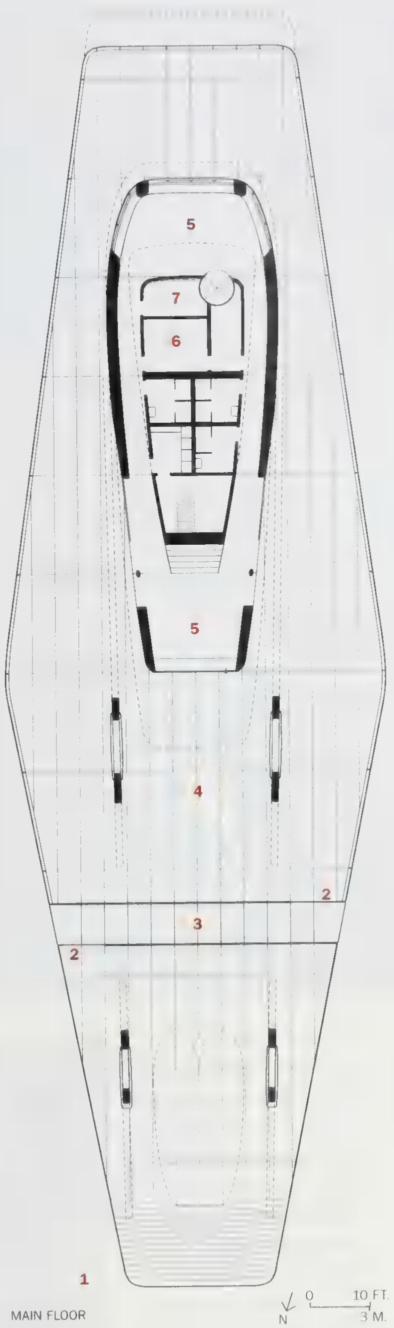
Asymptote clad HydraPier in sleek metal panels molded in a process normally used in aeronautics, not architecture. In this fabrication process, a controlled explosion forces metal into molds with three-dimensional curvatures. Usually, a building doesn't have enough repetitive elements to make this technique economical, Rashid explains, but he and his colleagues consciously designed this building to "fit" the technology. To maximize the interaction between sky and water, the firm painted the building's surfaces in four different hues: white, silver, blue, and gray.

While Rashid and Couture have designed virtual environments for the Guggenheim Museum and the New York Stock Exchange, HydraPier shows they are as fascinated by elegant engineering as by bits and bytes. In fact, the pavilion offers a sensory experience, not just a built manifestation of computer dogma. "Just as Modernist architecture was

Tracy Metz is RECORD*'s Amsterdam-based correspondent. Her latest book,* Fun! Leisure and Landscape, *will be published in November by NAi Publishers.*

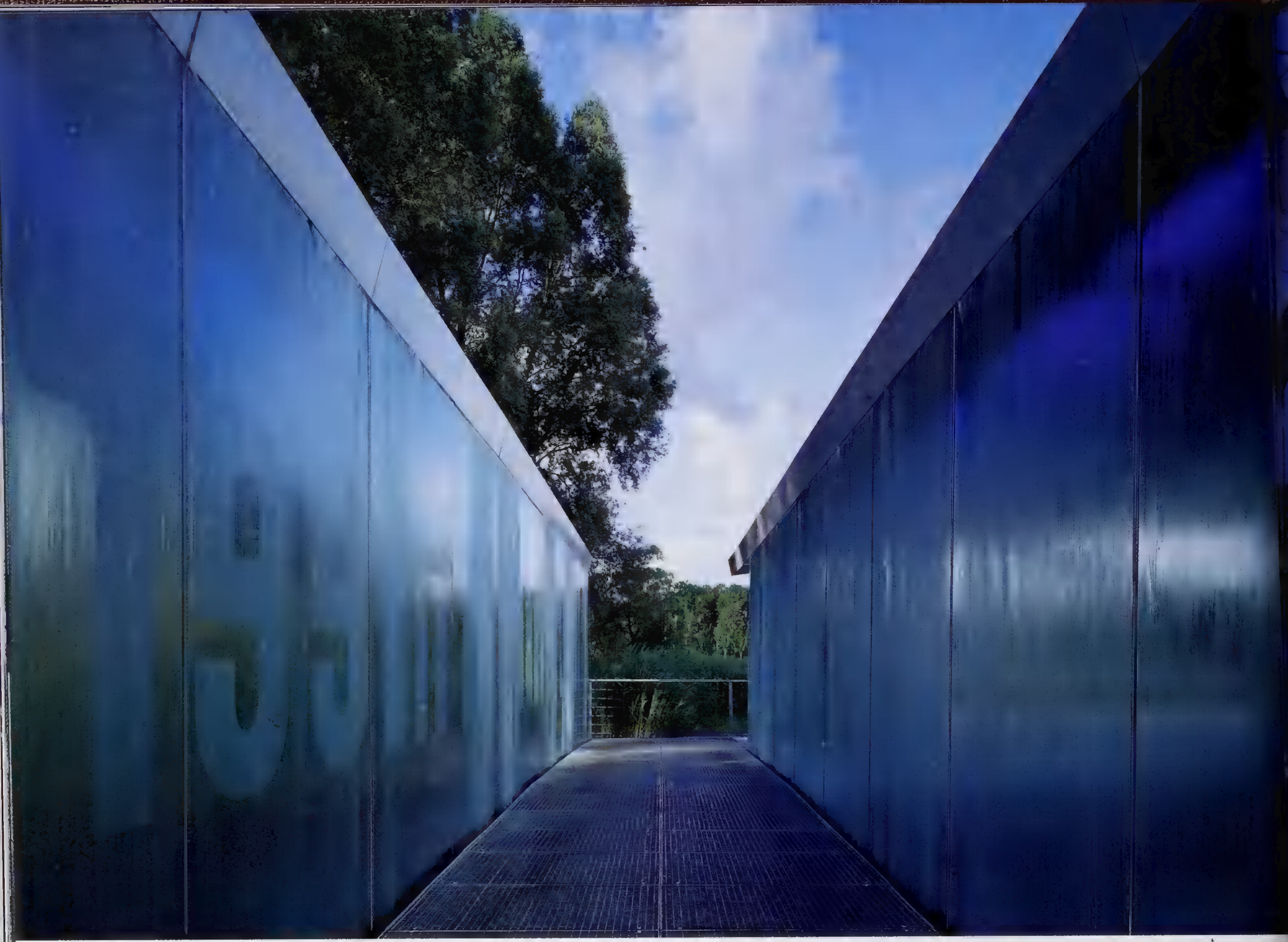
Project: *HydraPier, Haarlemmermeer, the Netherlands*
Client: *Municipality of Haarlemmermeer—Arnold Huijsmans, Rik Bolderheij*
Architect: *Asymptote—Hani Rashid, Lise Anne Couture, principals; Elaine Didyk, Birgit Schoenbrodt, Jose Salinas, John Cleater, Gemma Koppen, Martin Thue Jacobsen, Alain Merkli, Moritz Schoendorf, Rafal Bajuk, project team*
Associate architect: *Architektenburo Bronsvoort*
Engineers: *Ingenieursburo, Smit Westerman (structural); Octatube (glass structure); Lotek (water)*
Contractor: *Nijhuis Bouw*



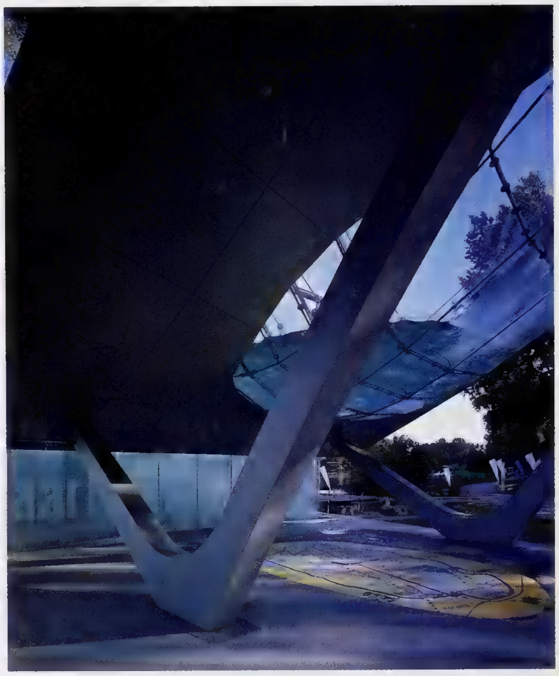


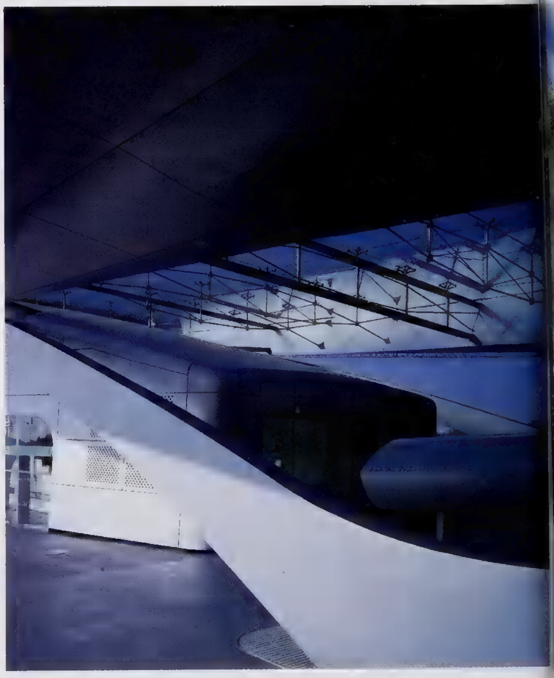
The main path through the project runs between two water walls (left), offering blurry views to exhibition areas and the lake beyond. Surfaces range in color from white and silver to blue and gray, so sky and water seem to merge.

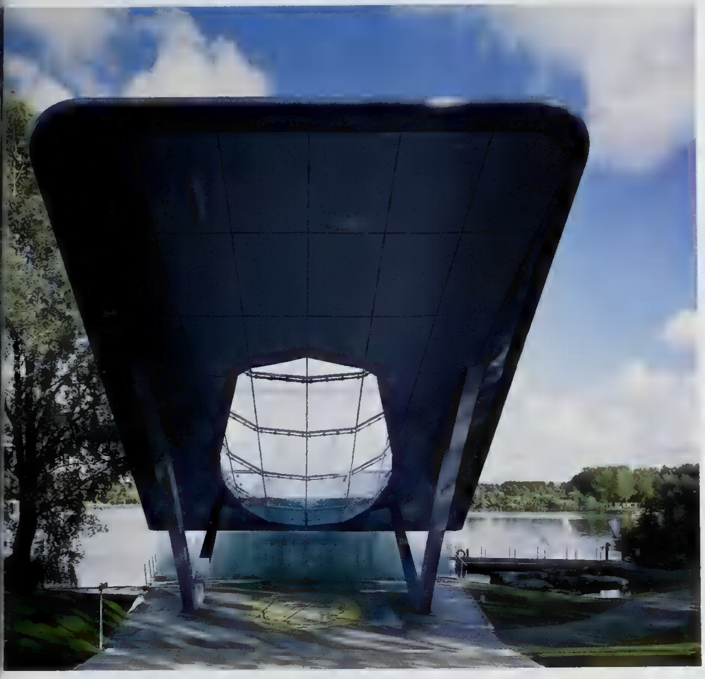
1. *Approach from park*
2. *Water wall*
3. *Entry path*
4. *Exterior exhibition*
5. *Exhibition*
6. *Kitchen*
7. *Office*



Space is defined by glass and water at the entry path (above) but flows freely around the exhibition pavilion (opposite, top). The glass sections of the entry canopy (near right and opposite, bottom) and main roof (far right) employ cables and suction cups engineered by the firm Octatube.







inspired by advances in painting and film, we are inspired by the hybrid reality of new media and information technologies," says Rashid. "Much of our work since we started in 1989 has been about bringing the real into the virtual; now we are bringing the virtual to the real."

Given the municipal aspirations for HydraPier, the installation inside the pavilion is disappointing. Instead of experiencing a contemporary *gesamtkunstwerk* of cutting-edge exhibition design, visitors find uninspired videos of tulip fields and airplanes taking off and a hand-painted map of the Haarlemermeer that looks like it came from a local grade school. But HydraPier will outlast this first temporary use and could serve as a landmark building helping Haarlemmermeer establish itself as place where innovative design matters. ■

Sources

Aluminum panels: *NV Aluminum Products Benelux SA*

Molds for 2D and 3D curved panels: *Komplot-Plottechniek*

Steel fabrication: *Smulders Ducson bv.*

Kitchen: *Bulthaup*

Paint finish: *Baril Coatings; Sigma Coatings*

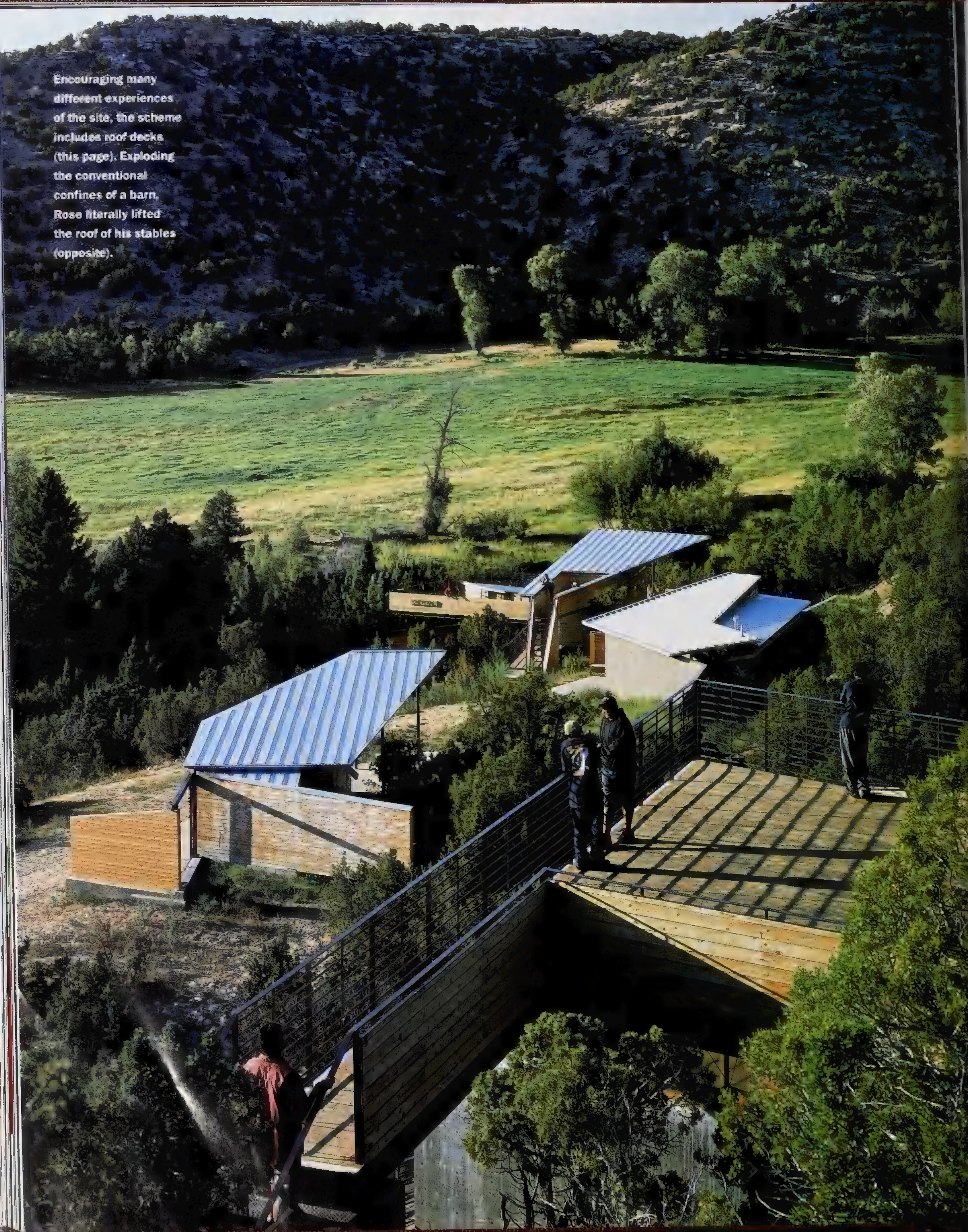
Elevator: *Axess Liften*

Lighting: *BEGA; Adolf Schuch KG; Philips*

Resin floor coating: *Sika*

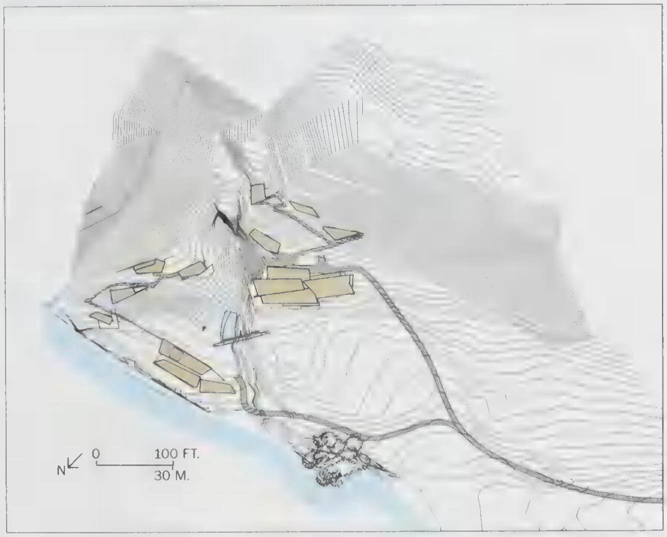
Furnishings: *Kartell*

WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.



Encouraging many different experiences of the site, the scheme includes roof decks (this page). Exploding the conventional confines of a barn, Rose literally lifted the roof of his stables (opposite).

Charles **Rose** Architects echoes the vast landscapes of north-central Wyoming in **CAMP PAINTROCK,** a life-changing program for inner-city teens at risk



By Sarah Amelar

Hyattville, Wyoming: population 100. It's a place where cattle far outnumber people—a town, bordering the Big Horn Mountains, so remote you'd have to drive an hour each way just to pick up, say, a quart of milk. Yet it's where many teens from Los Angeles's inner city now vie to spend five weeks each summer.

At first glance, this scenario may seem improbable, but Hyattville has become home to Camp Paintrock, a program offering potentially life-transforming experiences to disadvantaged young Los Angelenos. Paintrock is the brainchild and philanthropic creation of John Alm, 56, president and chief operating officer of Coca-Cola Enterprises. His idea was to take motivated, high-performing minority students just as they're about to enter high school—teens from difficult family conditions and neighborhoods blighted with poverty, youth gangs, rampant crime, and soaring drop-out rates—and place them in a healthy but challenging setting, unlike anything they've ever known before.

With an intense back-to-basics program of riding and caring for horses, rappelling canyon faces, swimming, bow-and-arrow hunting, and whitewater rafting, the camp may resemble getaways for more privileged kids, except that here the activities are likely to be new, if not daunting, to the campers. A major goal is to build self-esteem, self-reliance, and positive ways of overcoming fear. But that's just the kickoff. After one five-week session, the participants can't return, except as counselors, but Paintrock stays in touch with them, providing counseling and financial aid, keeping peers in contact with one another, and helping them stay on track to later reenter society, Alm hopes, "as college-educated, make-a-difference adults."

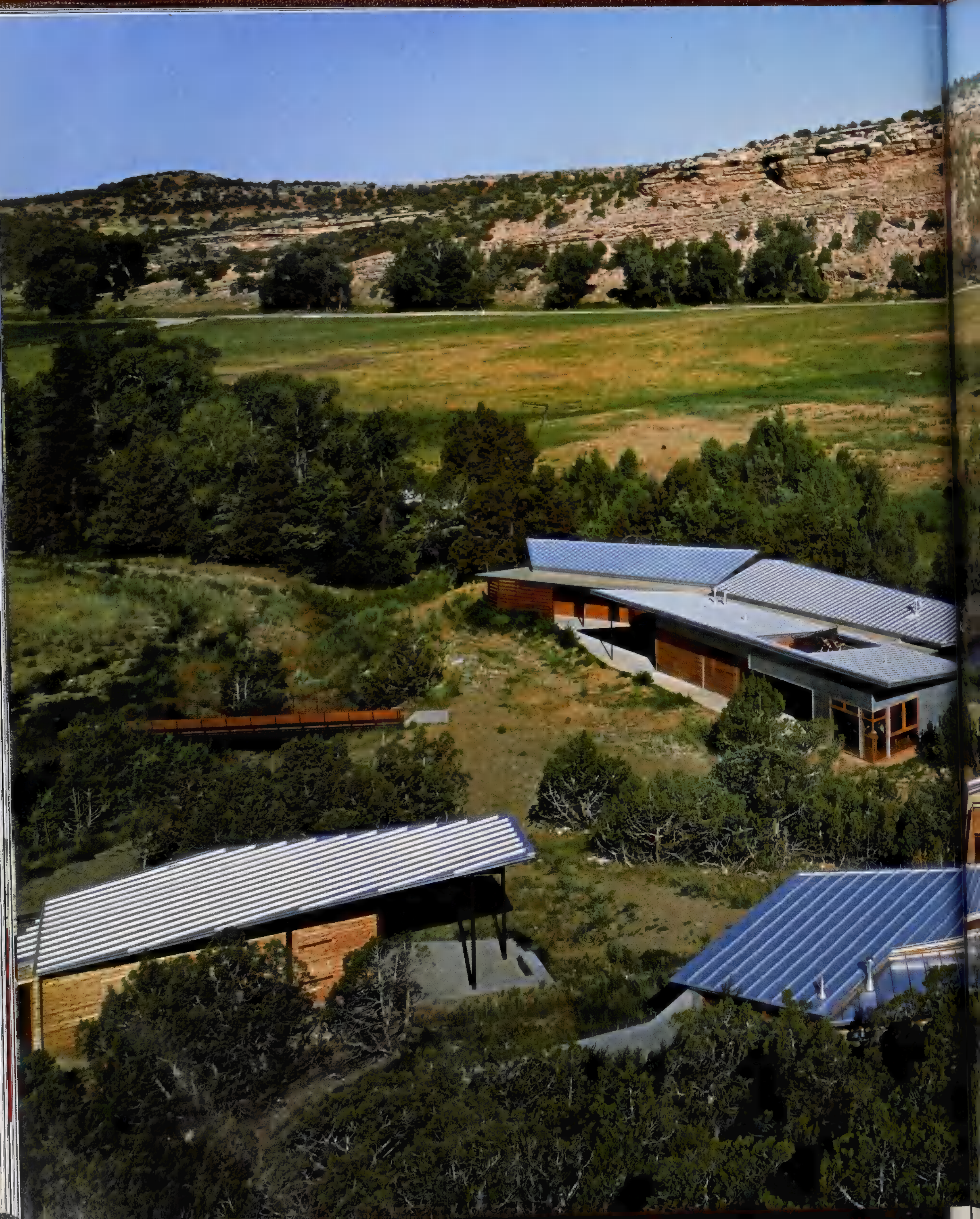
This is the kind of dream one might plan to realize "in retirement," says Alm of Paintrock. But, after suffering a major heart attack at age 37 and later losing his first wife to cancer, he began to wonder: "Who knows how long any of us will be around? Why wait?" He'd seen how much his own two children had gained from camp—and had also witnessed tough childhood conditions firsthand. He "started from nothing," he says, weathered the "total disintegration" of his family, and then bounced from one inner city to another. A two-time college dropout, he joined the military, finally got on course, and completed his undergraduate degree at age 28. Alm emerged as a man who clearly values education.

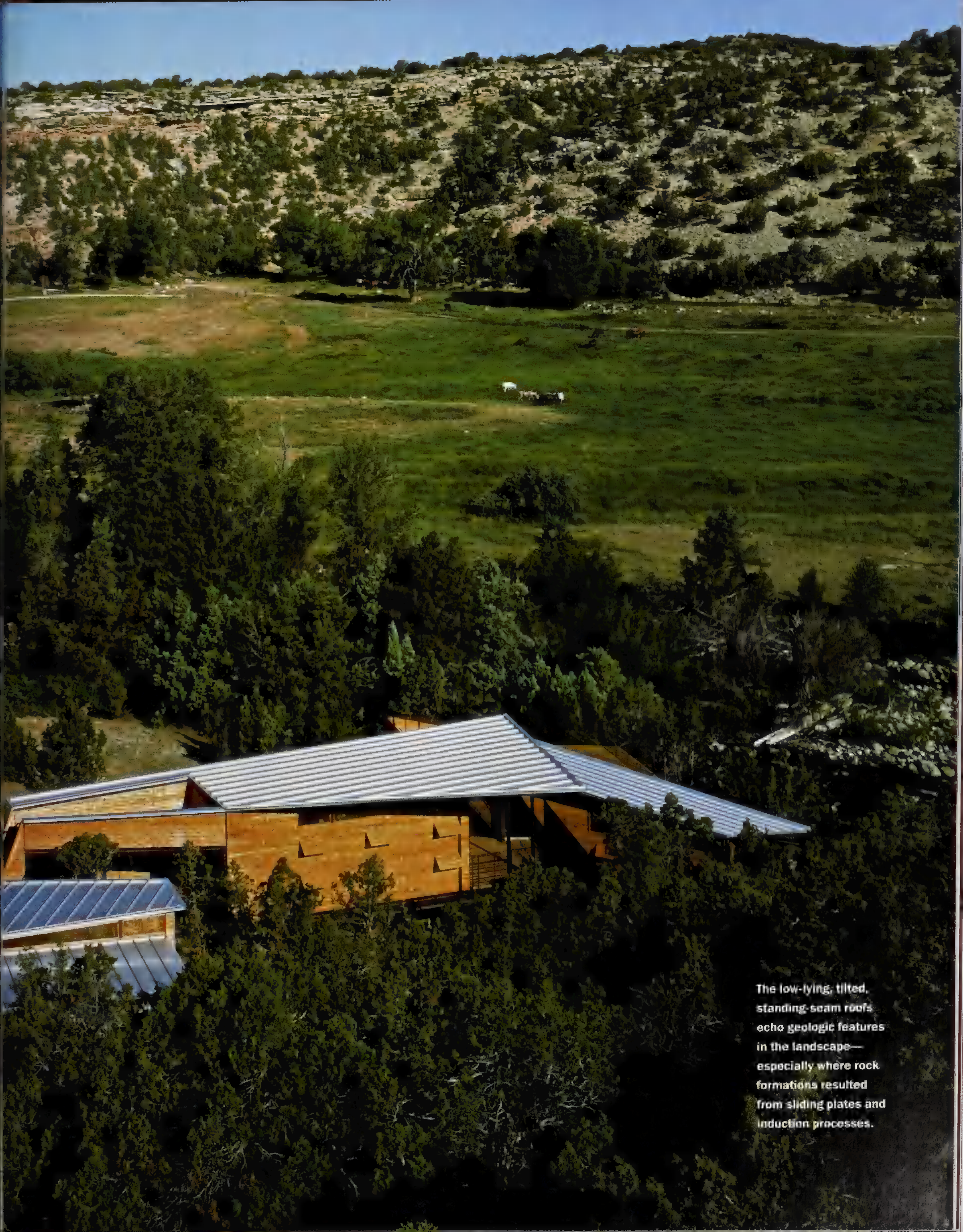
To transform his vision into reality, this Coca-Cola C.O.O. and his second wife, Carol, joined forces with Greg Kovacs, an M.B.A. with extensive youth-development and nonprofit experience, who now directs Paintrock's program. But to give the concept physical form and character, the team turned to the Boston firm of Charles Rose Architects. Rose had not designed a camp before, but his work had been consistently responsive to natural settings and included Thompson and Rose's award-winning artists' retreat in Florida [RECORD, June 1997, page 99].

By the time the Alms met Rose, they'd already obtained the land for Paintrock. The site, at the mouth of two small canyons, is part of a 110,000-acre ranch, where John now spends as much time as possible, and

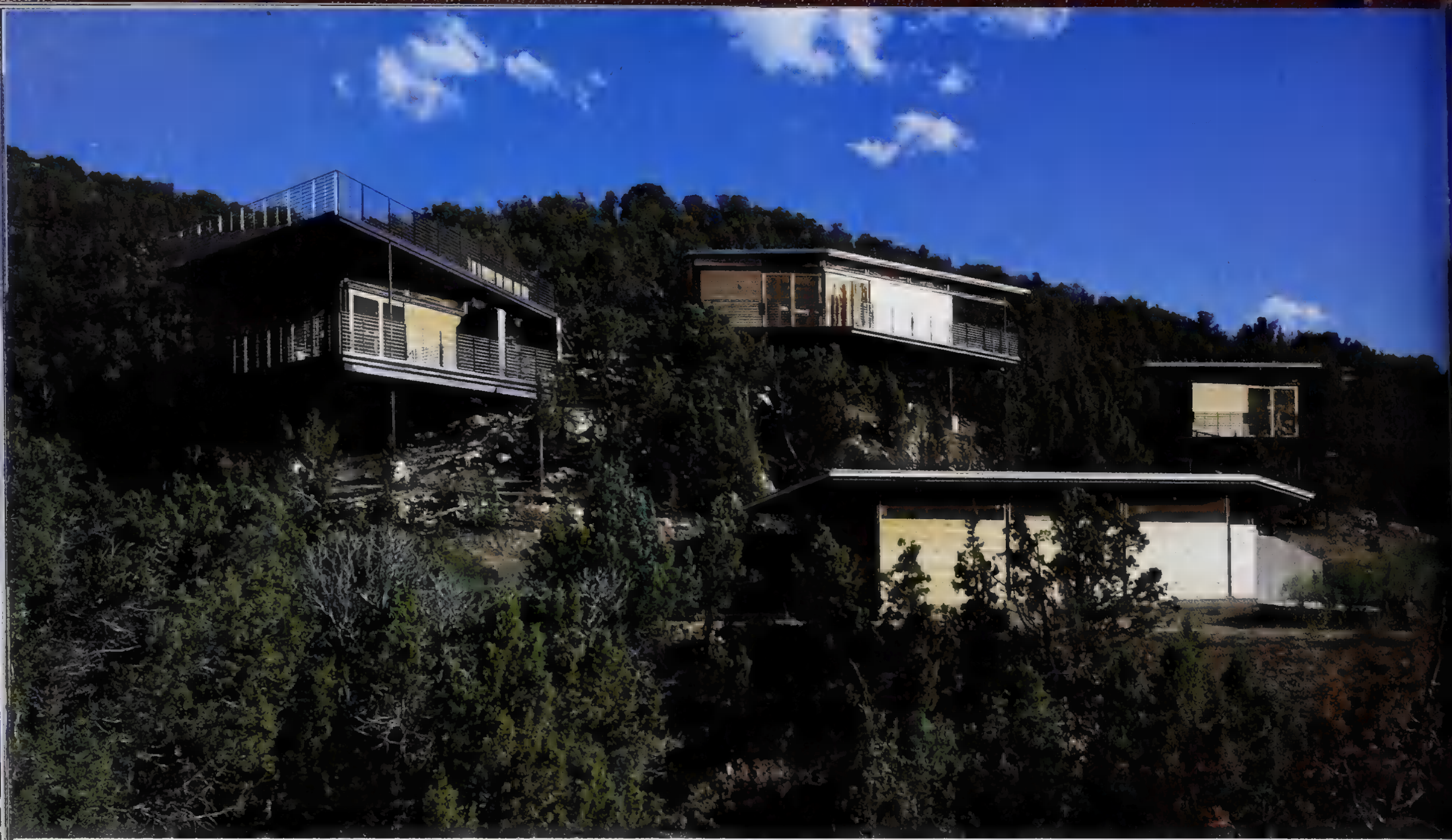
---

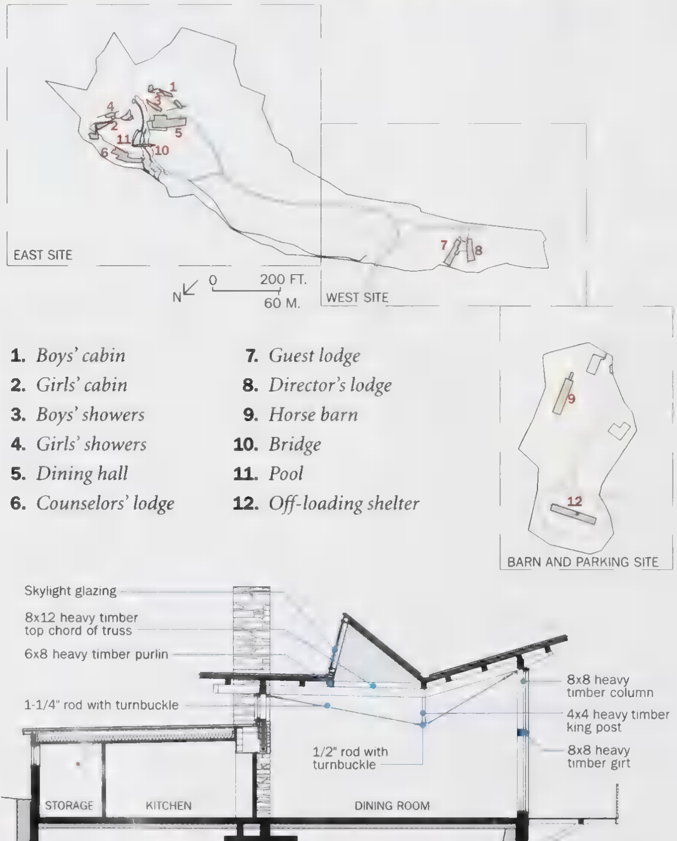
Project: *Camp Paintrock*
Owner: *The Alm Foundation—John and Carol Alm*
Architect: *Charles Rose Architects—Charles Rose, design principal; Eric Robinson, David Gabriel, David Martin, project architects; Franco Ghilardi, Lori Sang, Takashi Yanai, Maryann Thompson, Marios Christodoulides, Patricia Chen, Chris Hoxi, Heidi Beebe, project team*
Engineers: *Arup (structural); Weber (MEP); Steedley (civil); Wolz (surveyor)*
General contractor: *Groathouse*



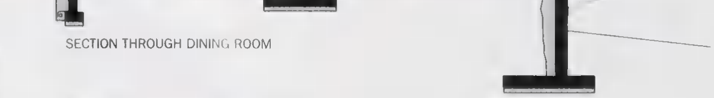


The low-lying, tilted, standing-seam roofs echo geologic features in the landscape—especially where rock formations resulted from sliding plates and induction processes.





1. *Boys' cabin*
2. *Girls' cabin*
3. *Boys' showers*
4. *Girls' showers*
5. *Dining hall*
6. *Counselors' lodge*
7. *Guest lodge*
8. *Director's lodge*
9. *Horse barn*
10. *Bridge*
11. *Pool*
12. *Off-loading shelter*



SECTION THROUGH DINING ROOM

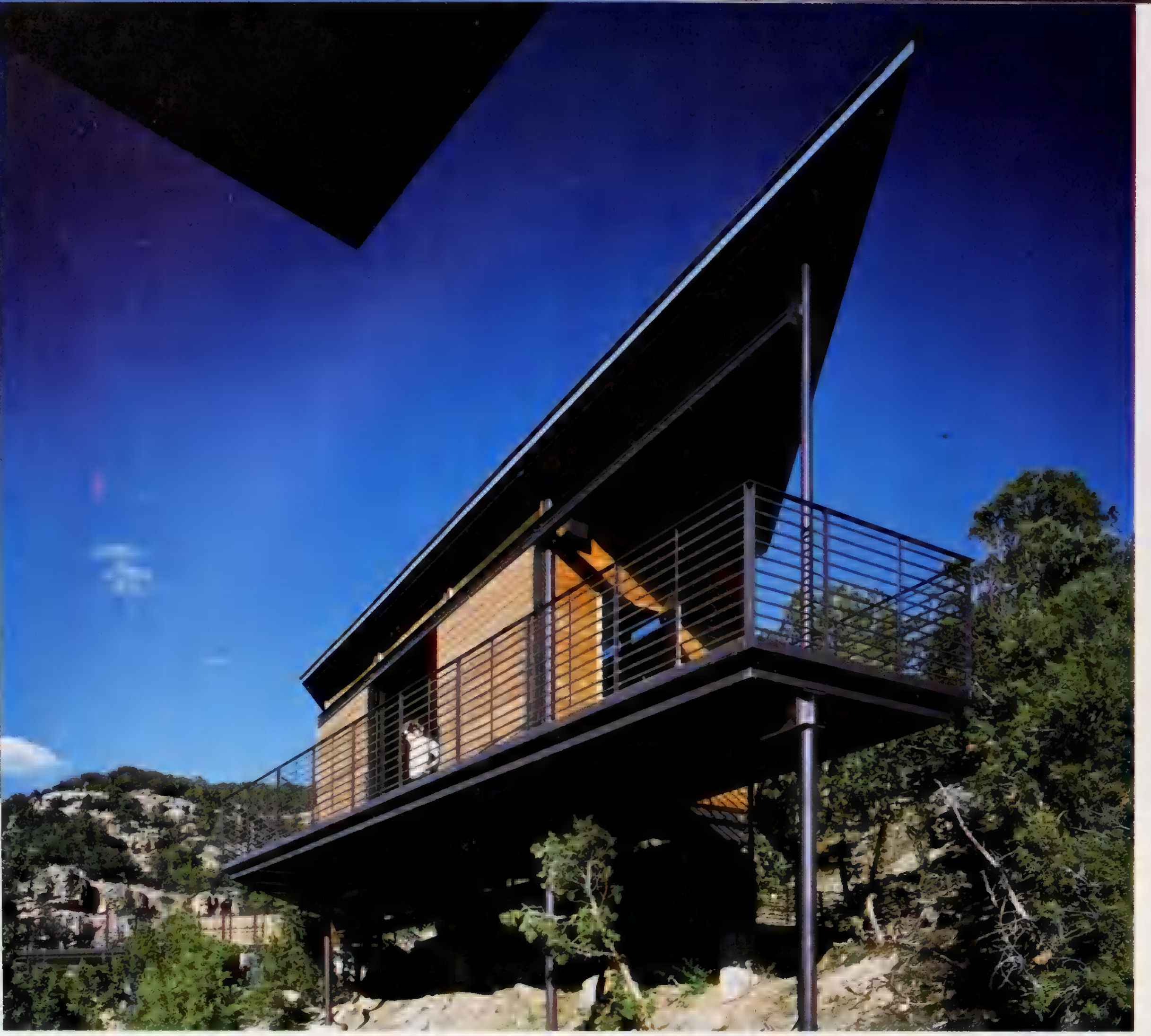
Carol raises thousands of head of cattle. Like much of northern Wyoming, it is landscape with a big sky and multiple personalities—passing from mesas and rolling hills silvery with juniper and dry sage brush to vast meadows flecked with occasional wild deer or elk to billowy cottonwood trees bordering the Paintrock Creek to massive terra-cotta-colored rock formations, seemingly surging up in long horizontal striations.

The project brief included a horse barn, a dining hall, a counselors' lodge, a director's house, and cabins for the 36 campers at each summer's two sessions (a remarkably small group of students, drawn annually from a pool of 10,000 eighth graders in the Los Angeles Unified School District). Taking bold, but calculated, risks, the Almses stipulated that the camp would be co-ed "to teach boys and girls to live together"—though males are explicitly forbidden from the female cabin zone, and vice versa. To develop further responsible attitudes, the campers would sleep in bunks without a counselor present. And, according to Rose, his clients favored rugged and challenging over cushy conditions, separating bathrooms from sleeping cabins, offering no paved paths, and omitting handrails wherever possible.

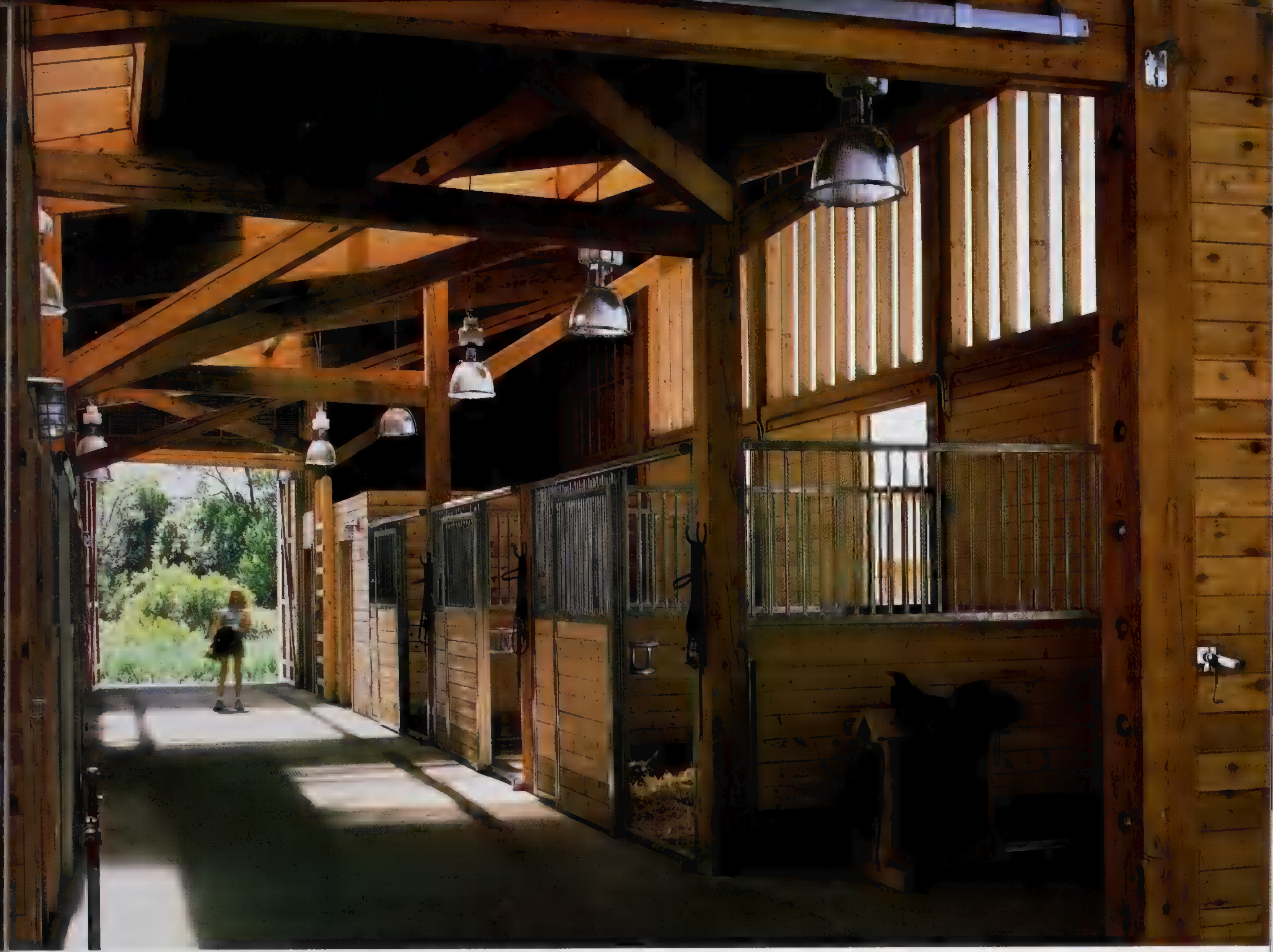
The landscape and its geologic formations provided immediate inspiration for Rose. At the same time, a tight budget, the remote location, and a mandate for a fast-track schedule (ultimately lasting 15 months from start to finish) persuaded him to enlist materials—steel, corrugated galvanized aluminum, concrete, regional river rock, and cedar siding—that matched the experience of local builders. The resulting scheme responds in scale, color, and texture to the site's existing farm structures, as it disperses 30,000 square feet of space among 16 new buildings over a 10-acre parcel. The largest of Rose's structures are a horse barn and a dining hall that doubles as a great room.

"We were trying to do something that'd be fun for the kids, but not cutesy—sophisticated instead of playing down to them," says Rose. The horse barn echoes the low-lying quality of a large lambing shed on

Perched on a canyon wall, the boys' cabins (opposite, top) rest on columns, allowing the structures to hover. The stable roof (above) establishes a visual dialogue with the mesa behind it. The dining hall's glazed elevations yield an exceptionally open quality (right, far right, and bottom). Apparently light wooden mullions play against the solidity of a river-stone chimney.



Instead of a conventional, dimly lit barn, the luminous stable (opposite) has skylights and clerestories. The visually floating boys' cabins, with their radically acute corners, have a subtle presence in the landscape (left and bottom left). All cabins feature rolling doors and screens that can open to the outdoors (below).



the site, while, at the same time, bursting open the traditional barn form. Hardly a conventionally boxy volume with a dark interior, Rose's stable is light and airy, clad in pale galvanized aluminum, with translucent polycarbonate-paned skylights and clerestories. The building's dogtrot, linking the stables to a storage room, frames views of Paintrock Canyon. At this juncture, the roof folds and jauntily tilts upward, following the silhouette of a mesa to the south and evoking the sliding plates and induction processes of nearby geologic formations.

Across the pastures, the dining hall, the prime indoor communal space, also rises to a playfully folding, lilting, and overlapping standing-seam roof. The roof's exposed heavy-timber structure forms inverted king-post trusses with steel-rod tension chords. A glazed south-facing wall with wood Mondrianesque mullions opens the room to spectacular views (as well as extreme heat when summer temperatures soar into the 100s).

Just as the campers use the site—its rock faces, streams, meadows, and trails—in varied ways, so too has the architect shaped and sited his buildings in response to a range of landscape conditions. The three boys' cabins, hovering over a canyon wall, are raised on columns, carefully placed to minimize site disturbance. Meanwhile, the three girls' cabins, across a gully, nestle into the land, and the shower buildings, with deep-set retaining walls, are further embedded into the hillside. Large rolling screen doors and outer wooden panels open the cabins to the outside. Through roof decks, lookouts, and elevated, interconnecting walkways, the scheme offers lots of views and overviews, encouraging different ways of seeing the landscape, as well as the complex array of roof configurations.

And the campers really seem to get it. A Paintrock teen named Michelle recently commented on "how you can see the night sky from every single bunk." Her fellow camper Betty chimed in: "And all the cabins are unique—some have roof decks, some don't but are close to the stream (which can help hot nights feel a lot cooler), some are near the bathrooms (which can be a very good thing), and one has this great boulder coming up through the floor." By design, there's no best or worst cabin: They all have carefully calculated trade-offs.

Of course, inner cities have many more deserving teens than Paintrock alone can accommodate. But its influence is spreading. Camp Coca-Cola (with a strong corporate backer, rather than the hands-on presence and personal touch of the Almses) opened this summer in St. Louis. "I may scare people," says John Alm exuberantly, "but other corporations and The Alm Foundation [which supports Paintrock] need to do a whole lot more—we should build at least 500 of these camps, all across the nation." ■

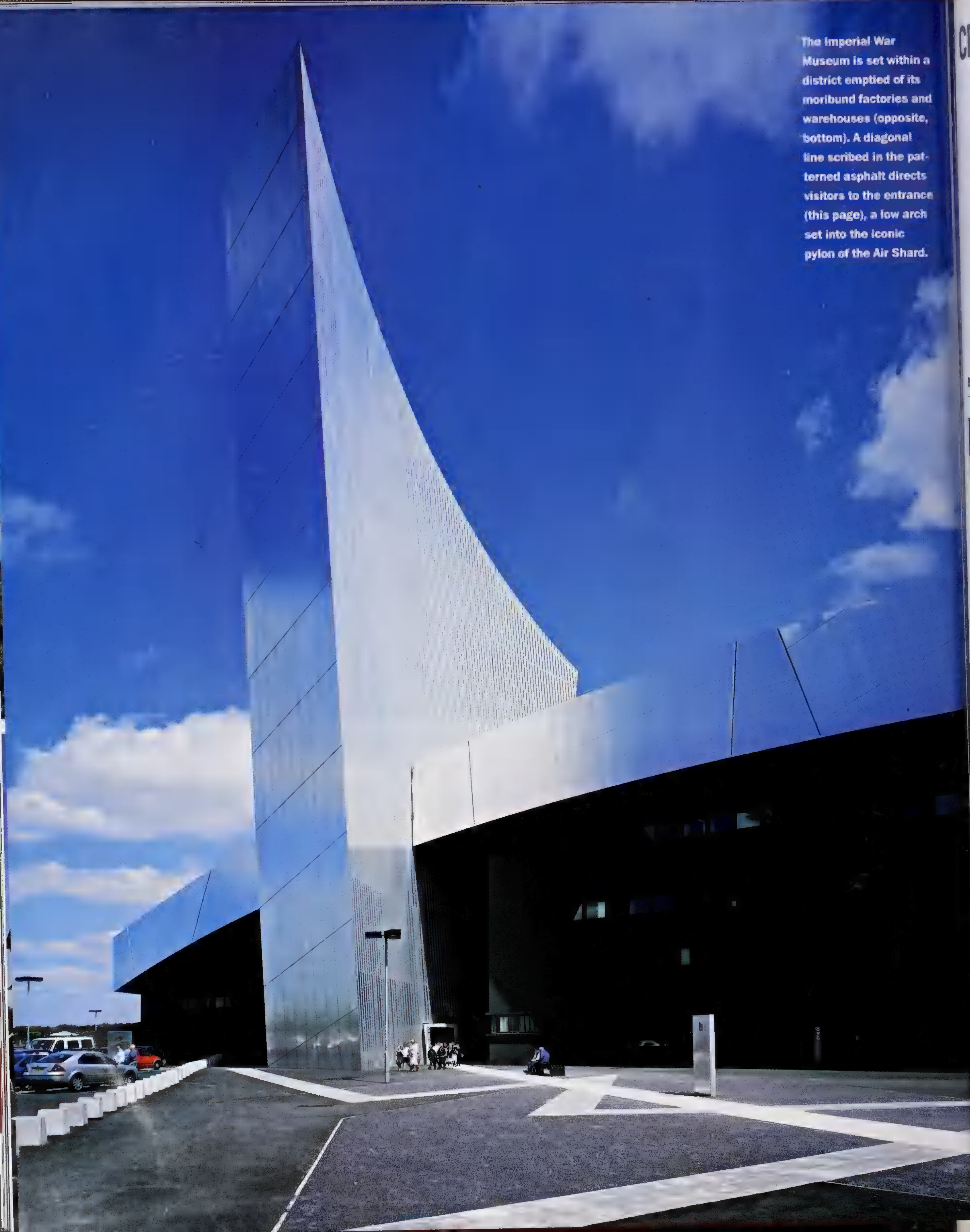
Sources

Windows : *Dynamic Windows*

Plumbing: *Basin Mechanica (toilets, sinks, faucets, showerheads)*

Kitchen appliances: *General Electric*

WWW For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

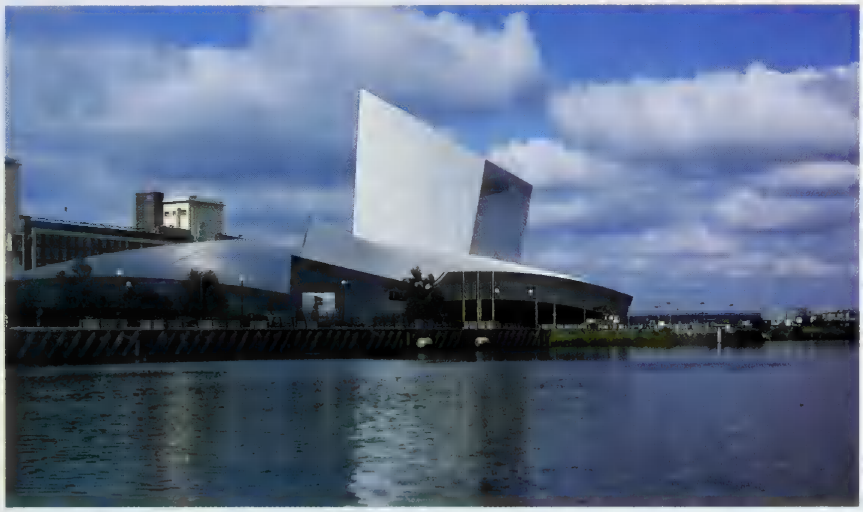


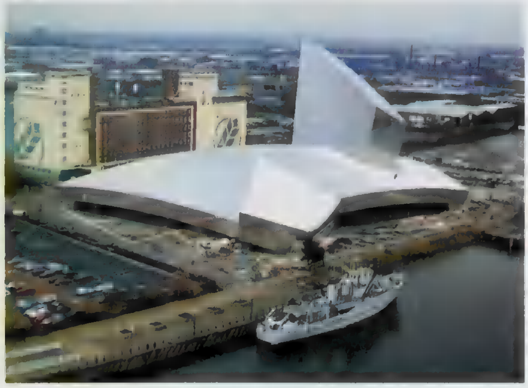
The Imperial War Museum is set within a district emptied of its moribund factories and warehouses (opposite, bottom). A diagonal line scribed in the patterned asphalt directs visitors to the entrance (this page), a low arch set into the iconic pylon of the Air Shard.

CRITICISM With the IMPERIAL WAR MUSEUM NORTH, Daniel Libeskind builds his case for a major museum destination on a budget

By James S. Russell, AIA

Daniel Libeskind sliced forebodingly empty spaces through the galleries in Berlin's Jewish Museum to remind visitors of the abrupt end of centuries of Jewish culture at the hands of the Nazis. He did not shrink when asked to depict in the fabric of a building the short, tragic life of Felix Nussbaum, which ended in the ever-tightening vise of the Final Solution [RECORD, January 1999, pages 76 and 90]. And in Manchester, in the haunted heartland of Britain's vanished 19th-century industrial might, he has now attempted to convey the tragic effects of war in the Imperial War Museum North (IWMN).





In Libeskind, the professional is personal. Fascism drove his family from Poland to the Bronx when he was a child. Death camps immolated relatives. "*Imperial*, *war*, and *museum* are the three worst words in the English language," he observes with a characteristically heavy-handed rhetorical flourish. So why did he take on this outpost of a museum whose headquarters in the former London asylum called Bedlam is festooned with the armed bellicosity of sun-never-sets empire? The professional: "The challenge is to get the public to want to come to a museum about conflict," he says. The personal: "I would not be alive had the Allies not taken up conflict with the Nazis," he said in an interview. "This museum doesn't celebrate war, it shows the difficulty of attaining peace."

His passion, tenacity, and ambition have taken him down an unusual path in this era of emotional distance. His work evokes the "speaking architecture" of the French 18th century, in which the very fabric of the structure is intended to change you, to prepare you to experience things differently. His approach appealed to the IWMN trustees because it expressed so well the intention to make more of the subject than a bombastic paean to heroism or an exploitation of the power and sex appeal of armaments. This branch's mission was, says director Jim Forrester, "to think about war's effect on people. We are interested in the toil and sacrifice of the armed forces, but also the people behind the scenes, those who stayed home and those who were caught in the middle."

But as you leave Manchester's hard-bitten—albeit in the process of being revitalized—city center, you wonder just what Libeskind has gotten himself into. Well before you arrive, the building's silvery interlocking curves announce its presence across the considerable emptiness of what was once among the world's largest inland ports but is today a vast flat plain dotted randomly with industrial leftovers and the occasional parking-lot-fronted retail strip. The museum's shiny roof folds over dark-painted, almost windowless walls of concrete. Surrounded by a fence (erected to foil vandals and terrorists alike), the building sits on an unarticulated expanse of asphalt. The initial effect is of Sam's Club with Style.

Is this forbidding arrival an appropriate introduction to the regimented world of the military and the unyielding realities of war? Or is it

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Project: *Imperial War Museum North, Manchester, United Kingdom*
Architect: *Studio Daniel Libeskind—Marcus Aerni, Wendy James, Martin Ostermann, Sören Bisgard, Stefan Blach, Gerhard Brun, Christopher Duisberg, Lars Fischer, Mari Fujita, Lars Gräbner, Jeanette Kuo, Susanne Milne, Daniel Richmond, Franziska Streb, Alexis Trumpf, team*
Associate architect: *Leach Rhodes Walker*
Engineers: *Arup (structural); Mott MacDonald (mechanical)*
Consultants: *Real Studio (exhibition design)*
Contractor: *Sir Robert McAlpine*

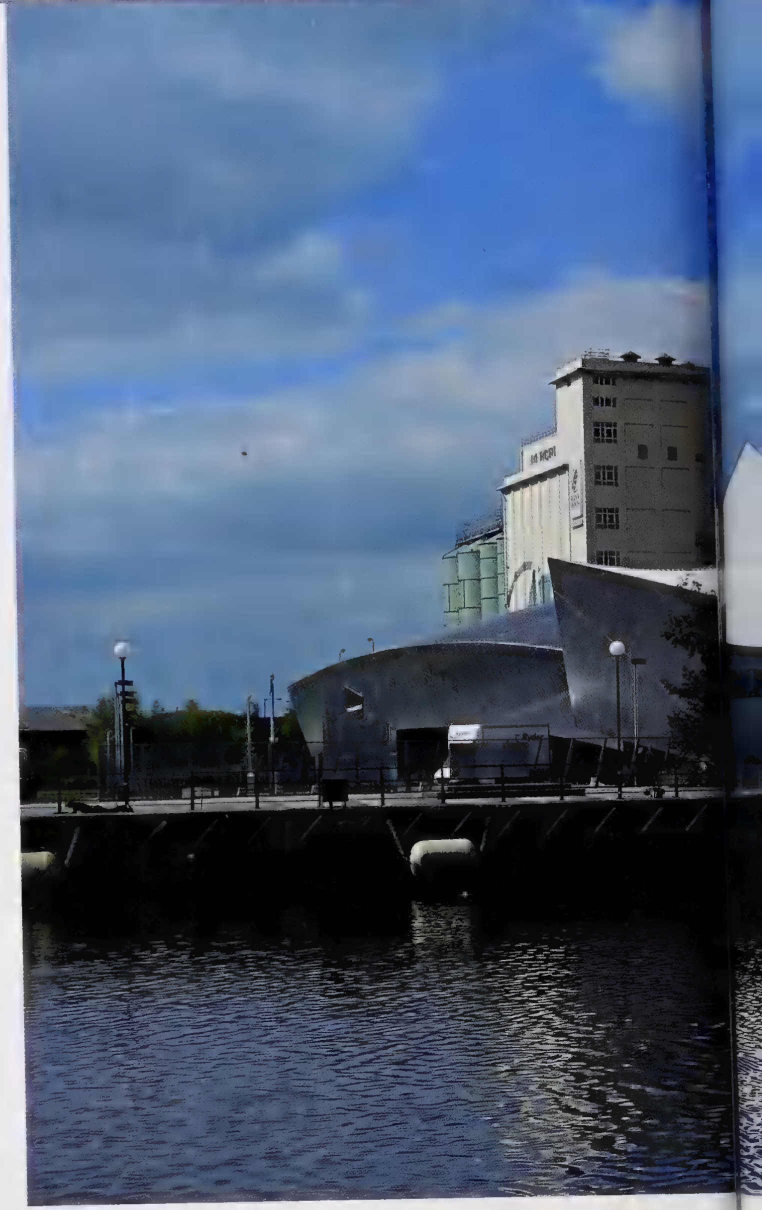
simply clumsy architecture? At the least, it represents the perils of Libeskind on a budget. The building's apparently arbitrary curves are supposed to represent shards of "the contemporary world shattered into fragments by conflict," as Libeskind describes it. Each represents a realm of conflict. The signboardlike vertical pylon called the Air Shard spears the grand horizontal vault of the Earth Shard, which contains the exhibition spaces. The Water Shard, enclosing a restaurant facing the Manchester Ship Canal, laps tentatively over Earth.

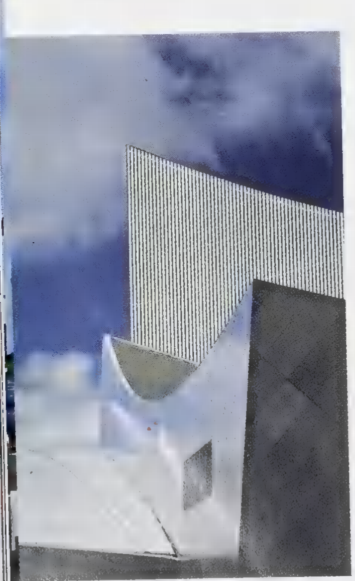
The shard idea was far more apparent in Libeskind's competition design (below). But several funding sources failed to materialize and what had been projected to be a budget of about $62 million had to be pared back to a cost of about $47 million. Given such a daunting constraint, Libeskind did not return to first principles, but reworked the design, attempting to retain its emblematic power. The lumpy result does not convey that power, even if you agree with Libeskind's insistence that the visitor need not "get" the shattered-globe metaphor.

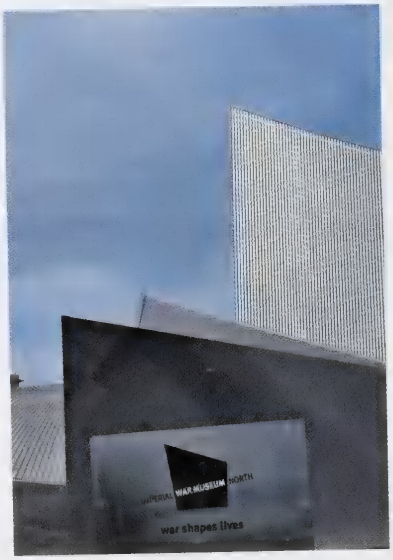
Libeskind's trademark is to get to your emotions through your body, and this strategy remains largely intact once you enter the museum. The cramped entrance explodes vertically into the 95-foot height of the Air Shard. On a typically bleak day, wind whistles through gaps between the metal-batten cladding, adding a haunted-house note to the spectacle of muscular, crisscrossed tubular-steel supports (page 130). Visitors are invited to take an elevator, which threads its way up through the 4.5-degree tilt of the shard to a viewing platform, where they are offered a vista over the old port, decimated by German bombs in World War II. The open, metal-grid flooring induces vertigo even in those who are nonagoraphobic enough to ascend in the first place.

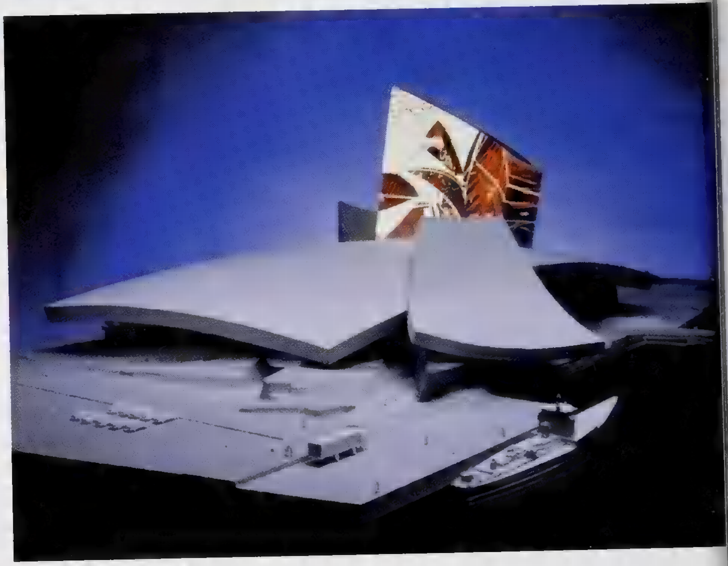
THE INITIAL IMPRESSION OF THE MUSEUM IS SAM'S CLUB WITH STYLE.

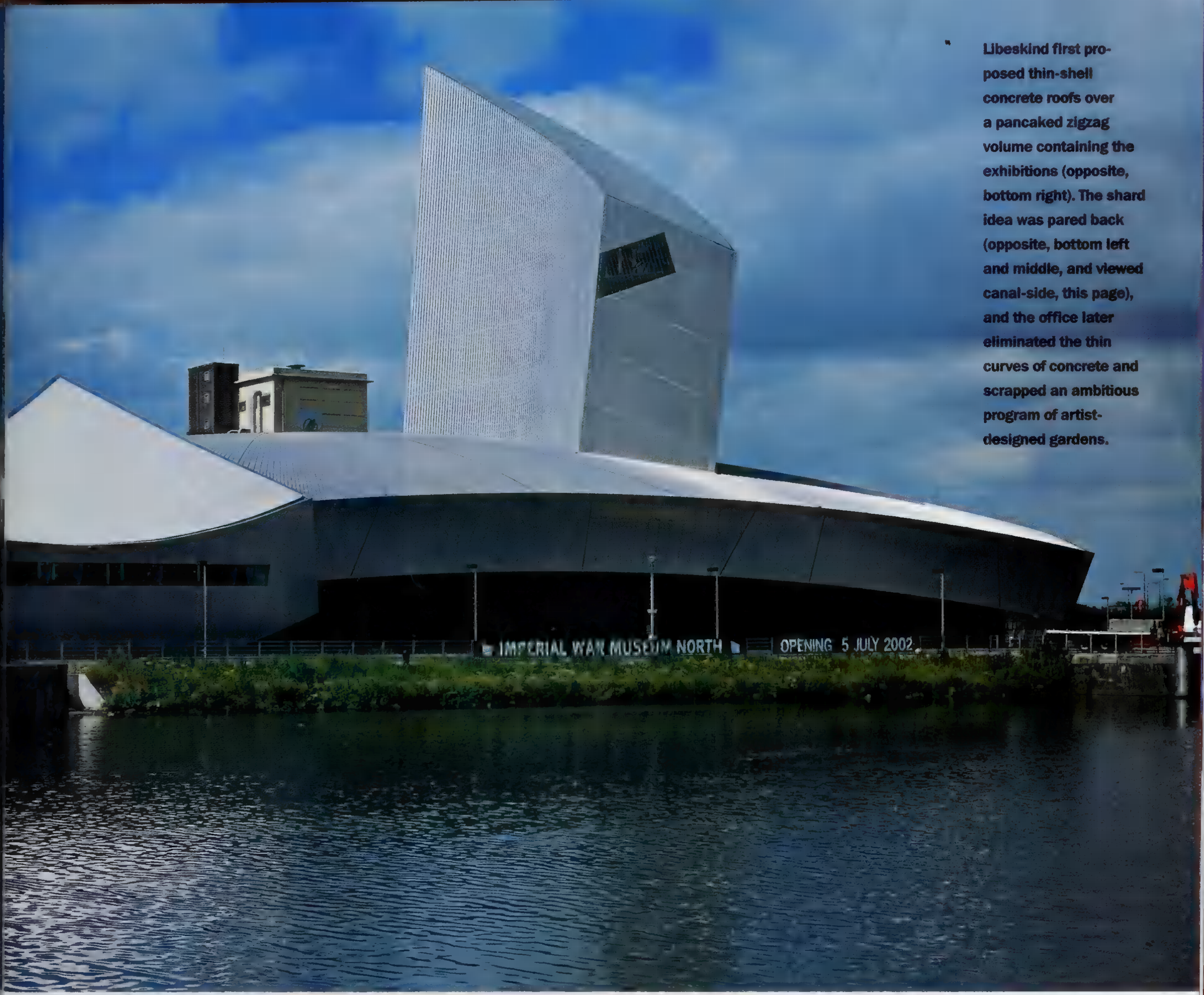
Exhibitions do not begin until after you enter the museum proper, passing through a low-ceilinged lobby and ascending the twisting stair to the upper level. The permanent exhibits occupy an enormous single space under the curved vault of the Earth Shard ceiling. With zigzagging outer walls, a U.S. Marine Corps Harrier jet apparently crashing through a wall, and jagged "silos" enclosing small, roomlike thematic presentations, the space's full extent is not immediately visible, but you are urged to explore its farthest reaches. The gently domed asphalt floor, echoing the





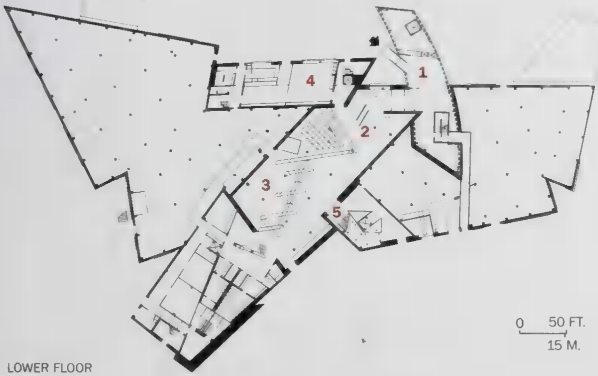




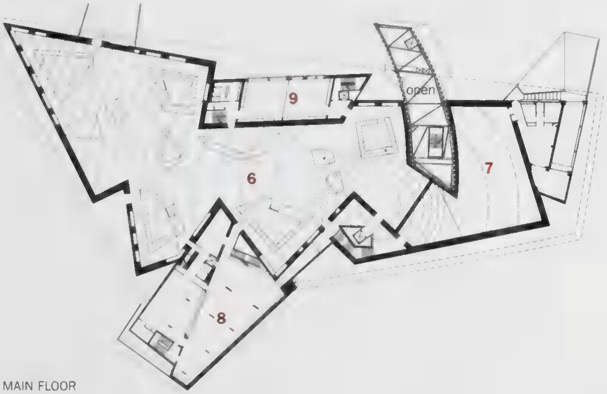


Libeskind first proposed thin-shell concrete roofs over a pancaked zigzag volume containing the exhibitions (opposite, bottom right). The shard idea was pared back (opposite, bottom left and middle, and viewed canal-side, this page), and the office later eliminated the thin curves of concrete and scrapped an ambitious program of artist-designed gardens.

1. *Air Shard*
2. *Lobby*
3. *Gift shop*
4. *Offices/classrooms*
5. *Stair to exhibits*
6. *Permanent exhibit*
7. *Temporary exhibit*
8. *Restaurant*

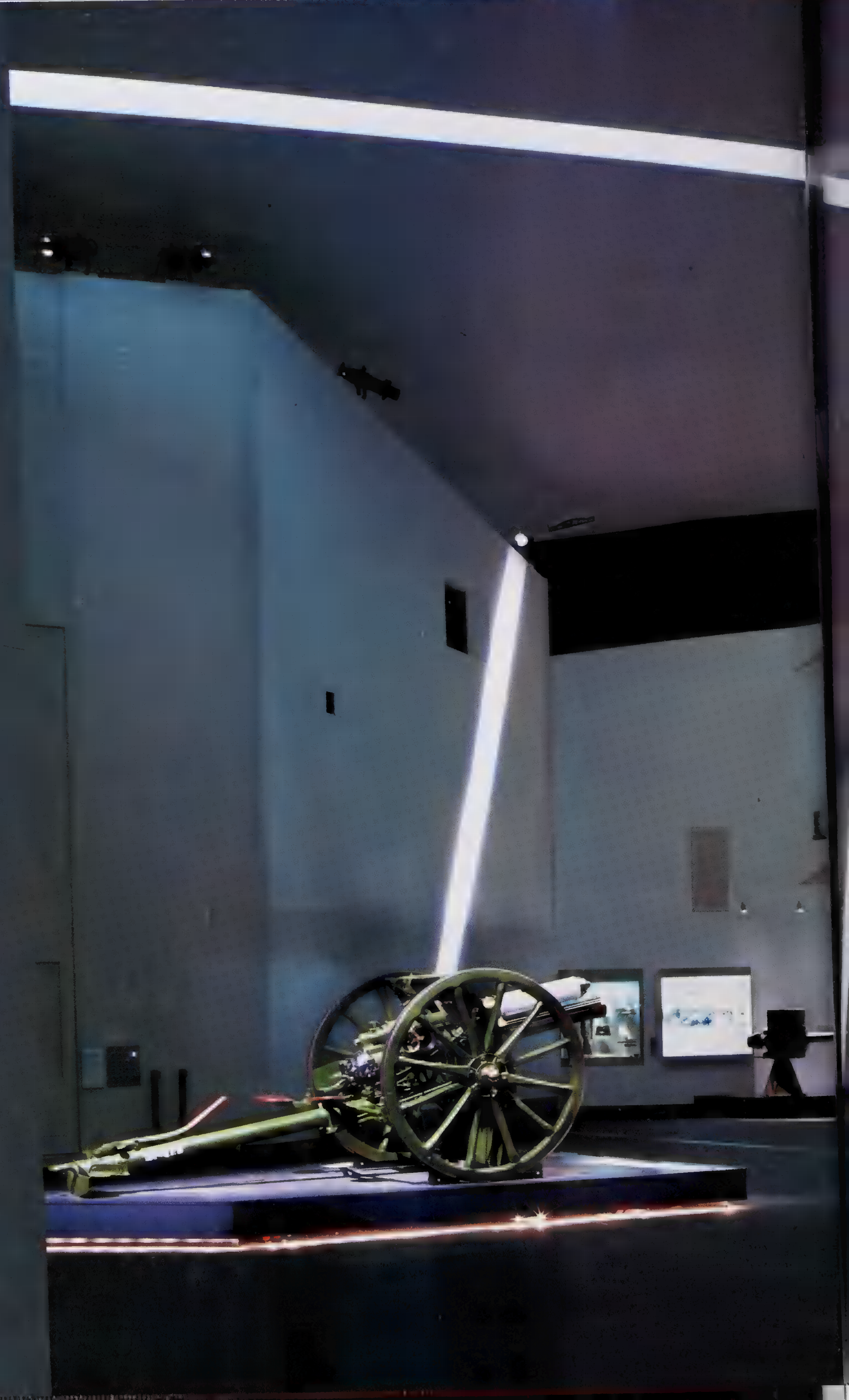


LOWER FLOOR

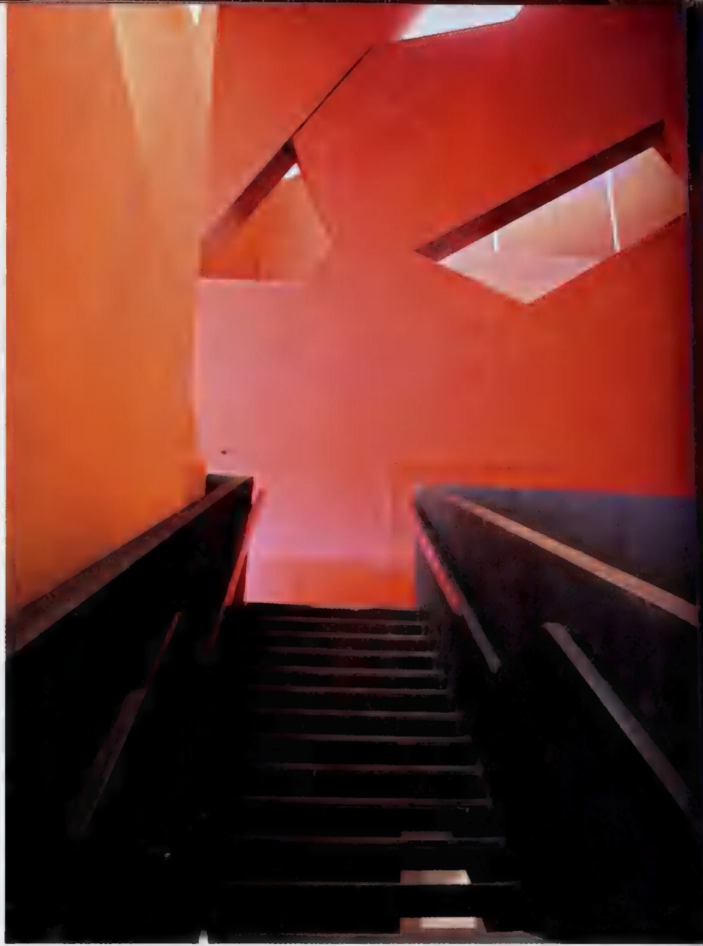


MAIN FLOOR

The museum's major drawing card is The Big Picture Show (designed by Event Communications), in which the permanent exhibition's wall surfaces become a screen for 15-minute-long thematic audio/visual presentations drawn from the museum's extraordinary image archives.



SCIENCE, TECHNOLOGY AND WAR
30
31



An elevator ascends through the tilted Air Shard (top left). The Water Shard houses the restaurant (bottom), near a stair to the boardroom (above). Libeskind's forbidding shapes and the menacing mounting of a Harrier Jet typify the museum's questioning stance (opposite).

roof's curve, insistently, perhaps unconsciously, tickles your nerve endings.

Libeskind's visceral approach—physically jarring you out of the confines of the everyday into the maelstrom of war—matches the museum's mission perfectly. "We made a conscious decision to allow ourselves to go into emotional territory," says Forrester. The intention to consider the effects of conflict rather than merely to trace it historically transformed the visitor experience from a passive one of gazing onto objects into one where artifacts and interpretation are used to stimulate questions and conversation. Indeed, much of the collection housed here is stored in a computerized stack system. Docents (cloyingly called "interactors") fetch up items in response to visitor interest or to make a point: You may view a letter from a soldier that arrived on exactly the same day as a telegram informing his family that he died. "The building sets you up for something different," says Forrester. "And it challenged us to create as bold an experience as the building offers."

LIBESKIND'S APPROACH—JARRING YOU INTO THE MAELSTROM OF WAR—MATCHES THE MUSEUM'S MISSION PERFECTLY.

Forrester says that visitors do find this approach stimulating. "People linger and talk. We can't get them out," he says. And visitor figures are comfortably over projections. The half-life of innovative museums can be short, however. The exhibitions at the Berlin Jewish Museum have failed to live up to the expectations created by Libeskind's building and are being revamped.

Libeskind gamely claims that revisiting every aspect of the design in a quest to reduce costs actually improved it, but the process seems to have stripped out the multiple readings and layers of meaning his team was able to offer at the Jewish Museum. In the face of adversity, he conspicuously soldiered on, as he did in Berlin, which took 11 excruciating years. But in this case, Manchester has ended up with little more than fun-house effects, like the dizzying platform in the Air Shard.

The Imperial War Museum has been well received in most of the European press, so I had to ask myself why the finished building so deflated my expectations for it. Perhaps others chose not to see the plop urbanism this represents. Across the canal from the museum, the city parachuted into this post-industrial no-mans' land The Lowry, a bombastic big-budget performing arts center recently completed by Michael Wilford. It gestures importantly across a bleak plaza to an outlet mall. With capital-C culture and low-c commerce united, you find the stock ingredients of 21st-century urban regeneration in its most dispiriting form. It reminded me of the doomed attempts by American cities to spur regeneration by trying to take some idea that succeeded elsewhere and implant it lite. Spectacle architecture can't be expected to work any better than the favored alternative, watered-down historicism, when it lacks an adequate commitment of resources and is unmoored from any apparent vision of what this part of Manchester should be. ■

Sources

Metal roofing: *Kalzip; Corus*

Curtain wall: *Broderick Structures*

Masonry walls: *Keith Walton Brickwork; Sto (synthetic stucco)*

Hardware: *Elite Ironmongery*

Furnishings: *Wilde + Speith, and custom by architect*

Lighting: *Erco*

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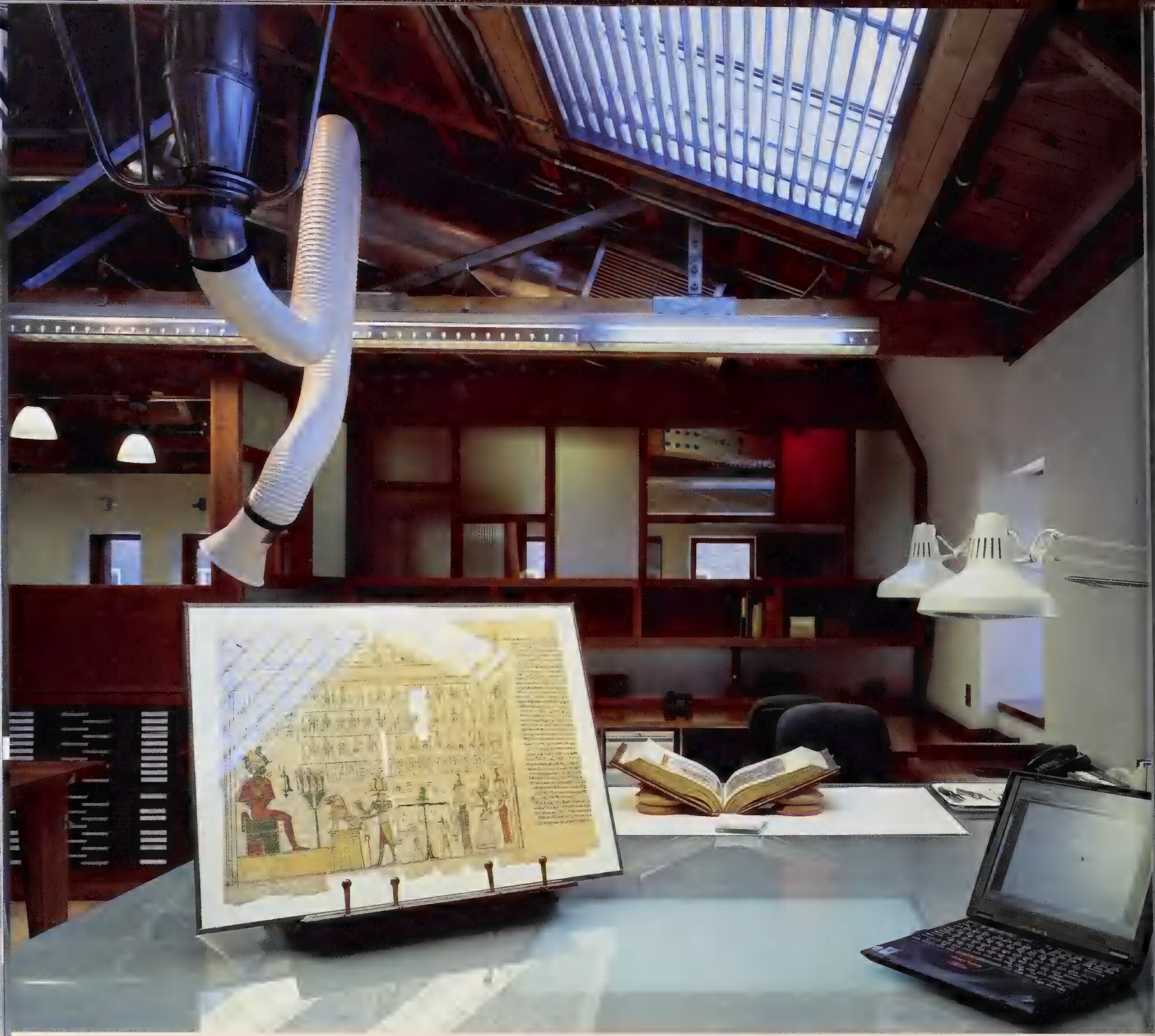
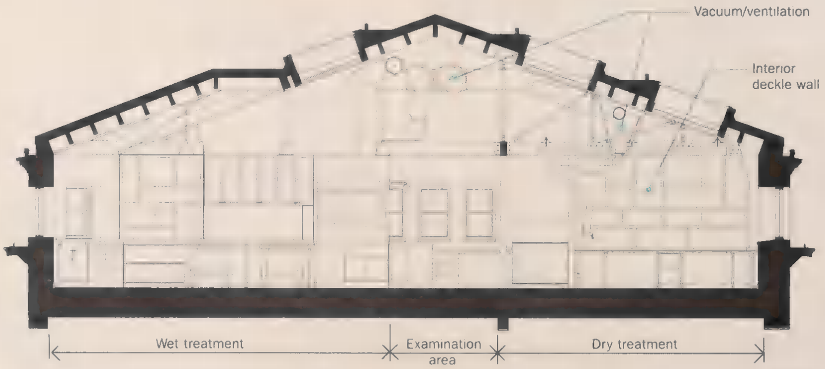
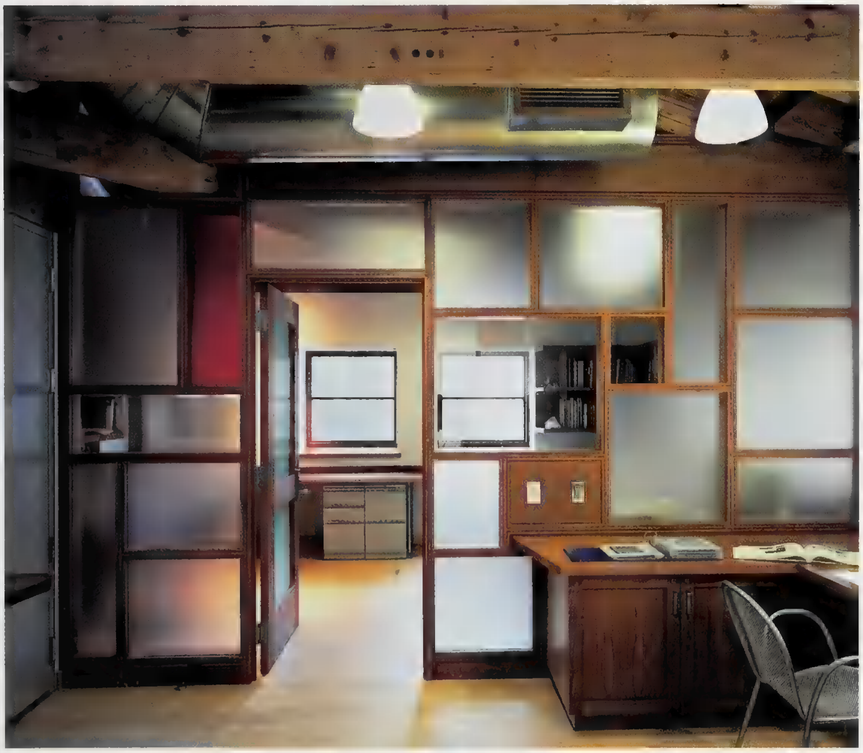




Custom workstations in the dry-treatment area (above) are spacious enough to accommodate both objects being examined and modern equipment. An interior wall (opposite) is composed of rectangular elements resembling deckles (paper-making frames); some pop out to display new papers.

For paper savers, Samuel Anderson Architect transforms an old attic at the Pierpont Morgan Library in New York City into the modern THAW CONSERVATION CENTER

By Deborah Snoonian, P.E.



During a recent trip to the new Thaw Conservation Center at New York's Pierpont Morgan Library, visitors spied a sheaf of letters written by English satirist Jonathan Swift sitting on a cherry countertop. Conservator Reba Snyder, who has the cool, firm handshake of a surgeon in a hygienic smock, was inspecting the pieces for signs of wear and tear. She gladly (albeit gently) thumbed through them so the group could get a closer look.

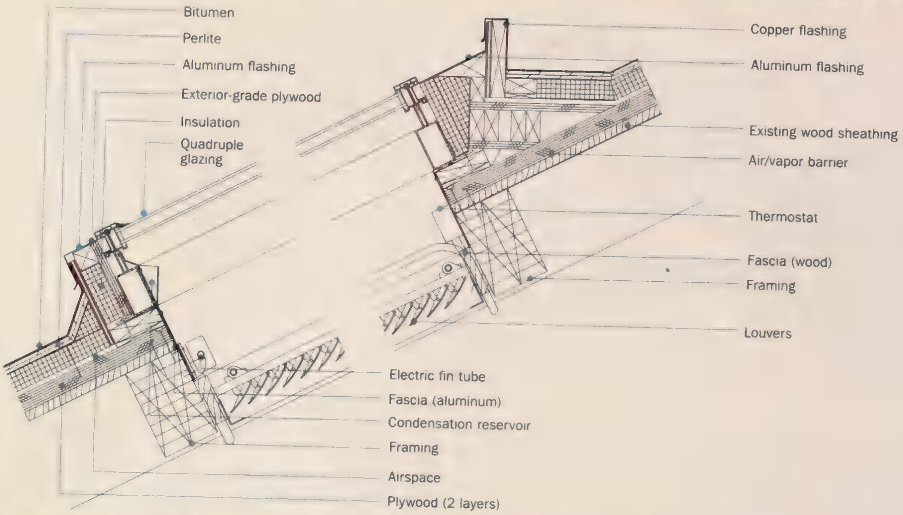
Such is a day in the life at the Thaw Conservation Center, where the Morgan's entire world-class collection of works on paper will be safeguarded against the ravages of time. The project reaffirms designer Samuel Anderson Architects' mastery of the programmatic and aesthetic challenges of outfitting old buildings with climate-controlled environments to protect objects of cultural and historic value—a skill the firm honed at Harvard's Fogg Art Museum [RECORD, September 1997, page 102]. Meanwhile, the Morgan now enjoys a state-of-the-art paper-conservation laboratory and educational center that's as handsome as it is functional.

Building the Thaw was a strategic milestone for the Morgan, which owns more than 350,000 drawings, prints, and manuscripts, one of the largest private collections in the U.S. "If we can't preserve our collection, our raison d'être has vanished," says Charles E. Pierce, Jr., director of the library. Conservation was once done on an ad hoc basis to prepare objects for exhibitions, but with the new facility, and under director Margaret Holben Ellis, the library can now establish a systematic plan for preserving all its precious holdings.

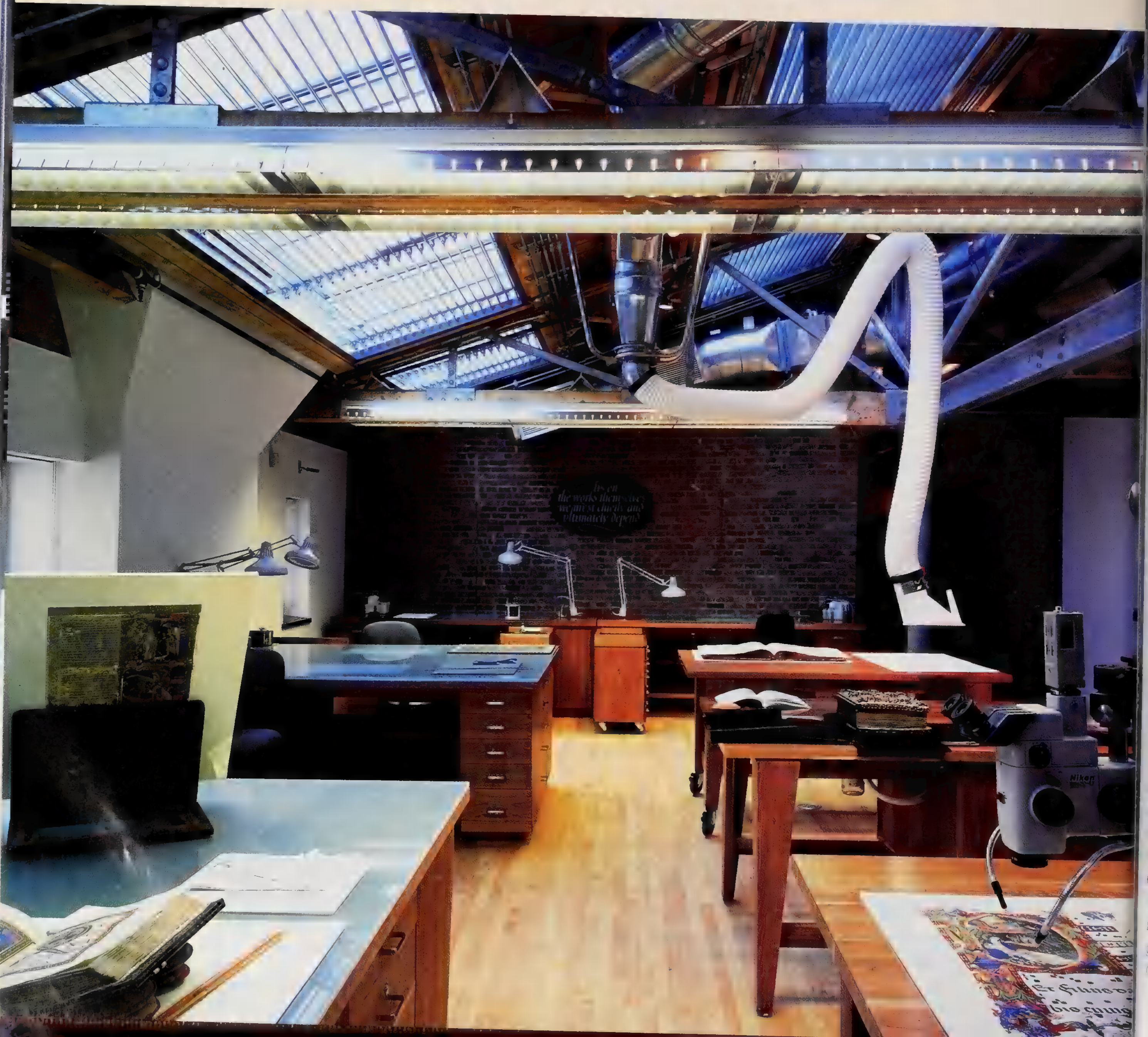
Conservators at the Morgan, a complex of three buildings in Midtown Manhattan, were eking out an existence in the attic of the Morgan House, a brownstone built in the 1850s with an addition dating from the 1890s. The attic, dim and rabbit-warrenish, lacked climate control and other modern technology needed for the meticulous work of paper conservators. It was this attic the architect had to retrofit.

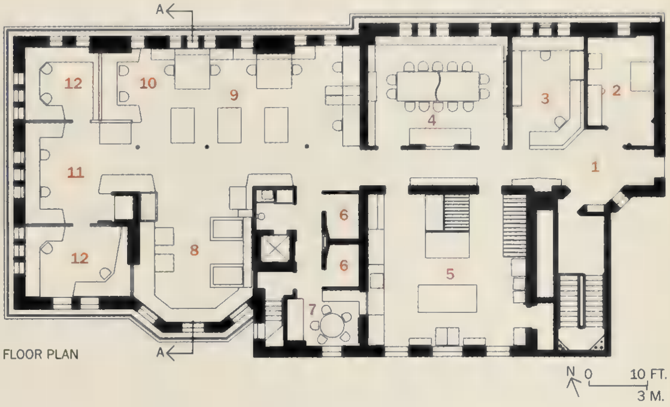
Principal Samuel Anderson sought to retain the historic flavor of the space while updating its mechanical systems, envelope, and furnishings. Scrapping a dropped ceiling opened up the interior dramatically and revealed a stately old wooden roof truss. He insulated the roof, which then had to be strengthened because the thermally neutral surface would bear a snow load. Adding steel plates to the wood truss and layering plywood in a staggered pattern over the original sheathing did the trick. "This was the biggest technical challenge of the project," says Anderson.

Project: *Thaw Conservation Center at the Pierpont Morgan Library, New York, New York*
Designer: *Samuel Anderson Architect—Samuel Anderson, design principal; Edward Gormley, project architect; Evan Ripley, staff architect; Jeff Atwood, Roger Mullin, project team*
Structural engineer: *LZA Technology*
MEP: *Landmark Facilities Group*
Consultants: *Kugler Tillotson Associates (lighting); Acoustic Dimensions (acoustics); Construction Specifications (specifications)*
Construction manager: *Barney Skanska*



The Thaw's old brick and wooden roof provides a contrast to new materials and technologies (below). Custom tables and large stainless-steel sinks (opposite, top) let conservators give papers a bath in the wet-treatment area. Shelving and drawers line the matting and framing room (opposite, bottom).





1. *Entry/reception*
2. *Photography*
3. *Administration*
4. *Seminar room*
5. *Matting/framing*
6. *Rest room*
7. *Pantry*
8. *Wet-treatment area*
9. *Dry-treatment area*
10. *Intern/fellow desk*
11. *Examination area*
12. *Office*

Because the Thaw must be humidified to prevent paper from expanding and shrinking too rapidly, a vapor barrier was installed around the envelope so that moisture won't condense on outside walls. Likewise, perimeter spaces around windows and skylights were thermally broken. Quadruple-glazed windows and skylights also prevent condensation, and their innermost layer is laminated to screen out UV rays. The natural light that pours in helps conservators distinguish white tones from one other, says Ellis, and windows and skylights frame city vistas.

Materials for custom furnishings were selected for their low volatile organic compound (VOC) content to prevent offgassing that would degrade paper. Surface treatment areas in solid cherry lack any glues, and the marine-grade cherry-veneer plywood used in the cabinetwork has a low formaldehyde content. Furnishings with simple, clean lines provide a textural interplay with the old brick and wood. The leitmotif of old and new in the Thaw's design complements the increasingly complex and technological work performed within its walls.

Anderson divided the floor plan into two functional areas: the western portion for wet and dry conservation, the eastern portion for services like the entry and reception area, photography, matting and framing, and a seminar room/library. Because visitors enter the Thaw from the east, Ellis notes that the layout keeps them from disturbing conservators working in the treatment areas. The Thaw's services will eventually be shared by the book bindery, to be located in the east, where Renzo Piano is planning a large addition to the Morgan Library.

Anderson enjoys working with conservators, who, like architects, are immersed in the art and science of the tangible. The Thaw gives these artisans a cozy home in the heart of the city, nestled high between the jutting pinnacles of skyscrapers and the muffled hum of street life. In an age of digital everything, it's a place where one knows that pixels will never trump paper. ■

Sources

Custom-fabricated structural system: *Feinstein Ironworks*

Windows: *Manning Design (custom mahogany)*

Glazing: *Southwall Technologies (exterior windows, skylights); Depp Glass (clear and patterned glass on interior walls); Bendheim Glass (colored laminated glass on interior walls)*

Cabinetwork/custom woodwork: *Peterson Geller Spurge*

Custom sinks: *BRC Commercial Kitchens*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

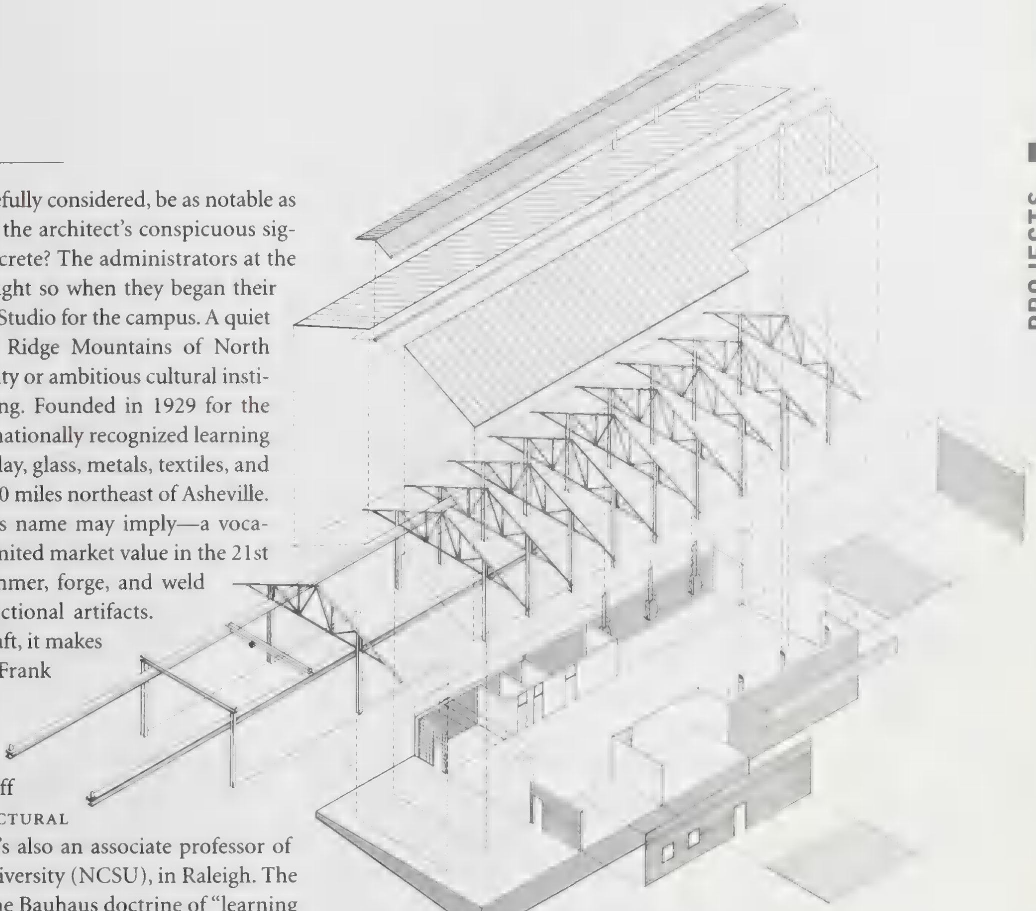
Frank **Harmon** has designed a rugged **IRON STUDIO** at the Penland School of Crafts in the Blue Ridge Mountains of North Carolina

By Sara Hart

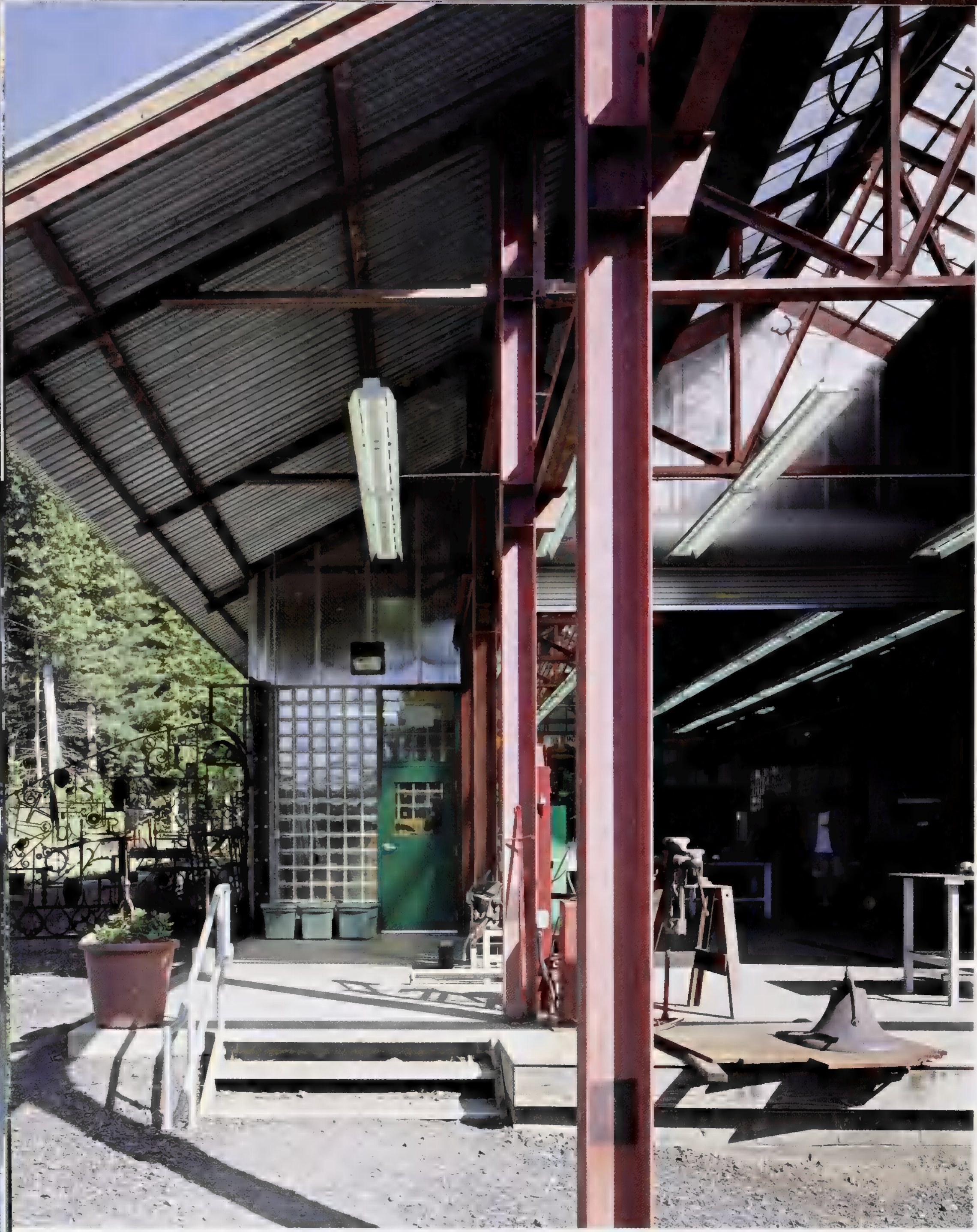
Can a series of subtle moves, carefully considered, be as notable as the Big Move—shorthand for the architect's conspicuous signature etched in steel and concrete? The administrators at the Penland School of Crafts thought so when they began their search for someone to design a new Iron Studio for the campus. A quiet institution nestled in the stately Blue Ridge Mountains of North Carolina, Penland is not a major university or ambitious cultural institution in need of a high-profile building. Founded in 1929 for the benefit of weavers, it has evolved into a nationally recognized learning center for 10 distinct crafts, including clay, glass, metals, textiles, and wood, and occupies a 400-acre campus 50 miles northeast of Asheville.

The Iron Studio is not—as its name may imply—a vocational school for farriers, a trade with limited market value in the 21st century. Instead, students learn to hammer, forge, and weld iron and steel into sculptures and functional artifacts. Because of Penland's commitment to craft, it makes sense that the school commissioned Frank Harmon, FAIA, to design the studio. Harmon is a Raleigh-based architect recognized for his own hands-on approach to projects that he and his staff often build themselves [ARCHITECTURAL RECORD, February 2001, page 120]. He's also an associate professor of architecture at North Carolina State University (NCSU), in Raleigh. The university's College of Design follows the Bauhaus doctrine of "learning by doing," Harmon acknowledges, so it's not unusual for students to get their hands dirty in the field. In this case, Harmon invited eight graduate students to spend a weekend at Penland inhaling the mountain air as well as the smoke of a coal-burning forge and to imagine a new studio for

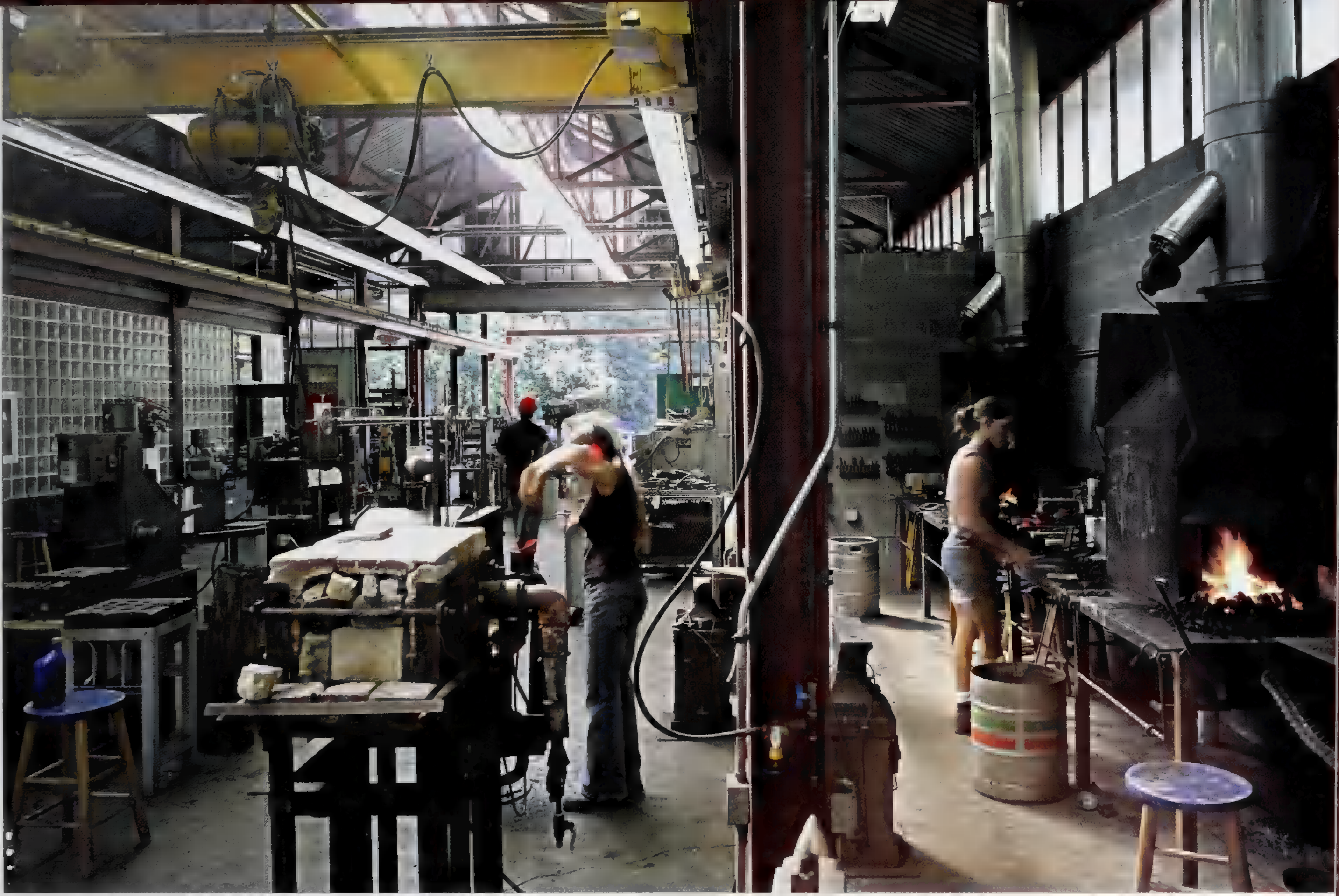
Project: *Iron Studio, Penland School of Crafts, Penland, North Carolina*
Architect: *Frank Harmon, FAIA, principal in charge; Charles Holden and Vincent Petrarca, project architects*
NCSU design team: *George Carter, Jason Holt, Ay Chung Liu, Tim Martin, Vincent Petrarca, Chris Rae, Rob Wagner*
Engineer: *T.C. Howard, Synergetics (structural); Ernest G. Myatt (mechanical)*
General contractor: *Appalachian Building Services—Ben Strickland, Fuzz Convery*
Forge designer: *Hoss Haley, Penland resident artist*



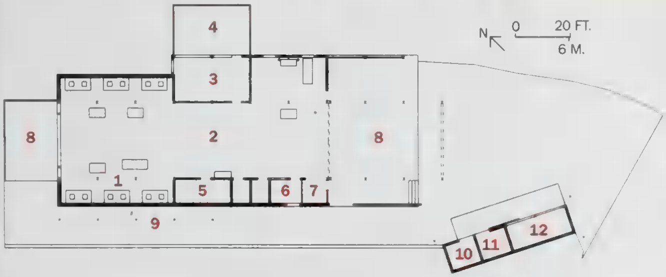
The Iron Studio (opposite and above) is a deceptively simple shed, composed primarily of exposed concrete block and a steel-trussed roof clad in galvanized sheet metal.



The south portico (left and below right) provides students with a view to the mountains and a covered work area. The rear facade (below left) has a rolling door that allows cool air into the forge area.



Students in the forge area hammer and weld red-hot metals into functional objects and works of art.



1. *Forging stations*
2. *Fabrication*
3. *Classroom*
4. *Deck*
5. *Tool storage*
6. *Office*
7. *Vestibule*
8. *Porch*
9. *Scrap storage*
10. *Sandblasting*
11. *Compressor*
12. *Coal storage*

apprentice smiths. The students spent the next few weeks sketching a concept and returned to Penland for client feedback.

Harmon and two associates—Vincent Petrarca and Charles Holden, AIA—then transformed the students' ideas, along with their own, into a buildable plan. The result is an open, steel-framed loft space with workstations around the perimeter and a high roof for exhausting smoke. The 6,312-square-foot studio is sturdy and practical, as one would expect. The Harmon Way guarantees that the design respects the program, the site, and the client and never wanders off into an exploration of architectural abstractions.

And yet, the craft is visible in his work, because Harmon has the same respect for off-the-shelf materials as he does for luxurious ones. Concrete block, corrugated metal, polycarbonate, and steel—the stuff of prefab industrial sheds—are, in Harmon's hands, worthy materials that, given the proper expression, make inspiring architecture. The stainless-steel flues that exhaust the smoke from 12 forges rise higher than they need to, but this move creates a defining, albeit modest, skyline and therefore a presence that distinguishes the Iron Studio from the other Penland studios housed in generic structures.

Then Harmon gave the ironmongers the gift of light. Clerestory windows and a skylight that runs the length of the studio flood the space with daylight, proudly illuminating the butch tools of a gritty trade—anvils, chisels, hammers, and fire-breathing forges—and, of course, exposing the usually hidden scars of construction. ■

Sources

Exterior masonry: *Concrete Block Insulating Systems*

Siding: *Centria*

Roofing: *Centria*

Windows: *Binnings*

Skylights: *Polygal USA*

Sliding doors: *National Manufacturing (hardware)*

Upswinging doors: *Atlas V*

Locksets: *Schlage*

Plumbing: *Speakman*

Forge flues: *Selkirk Metalbestos*

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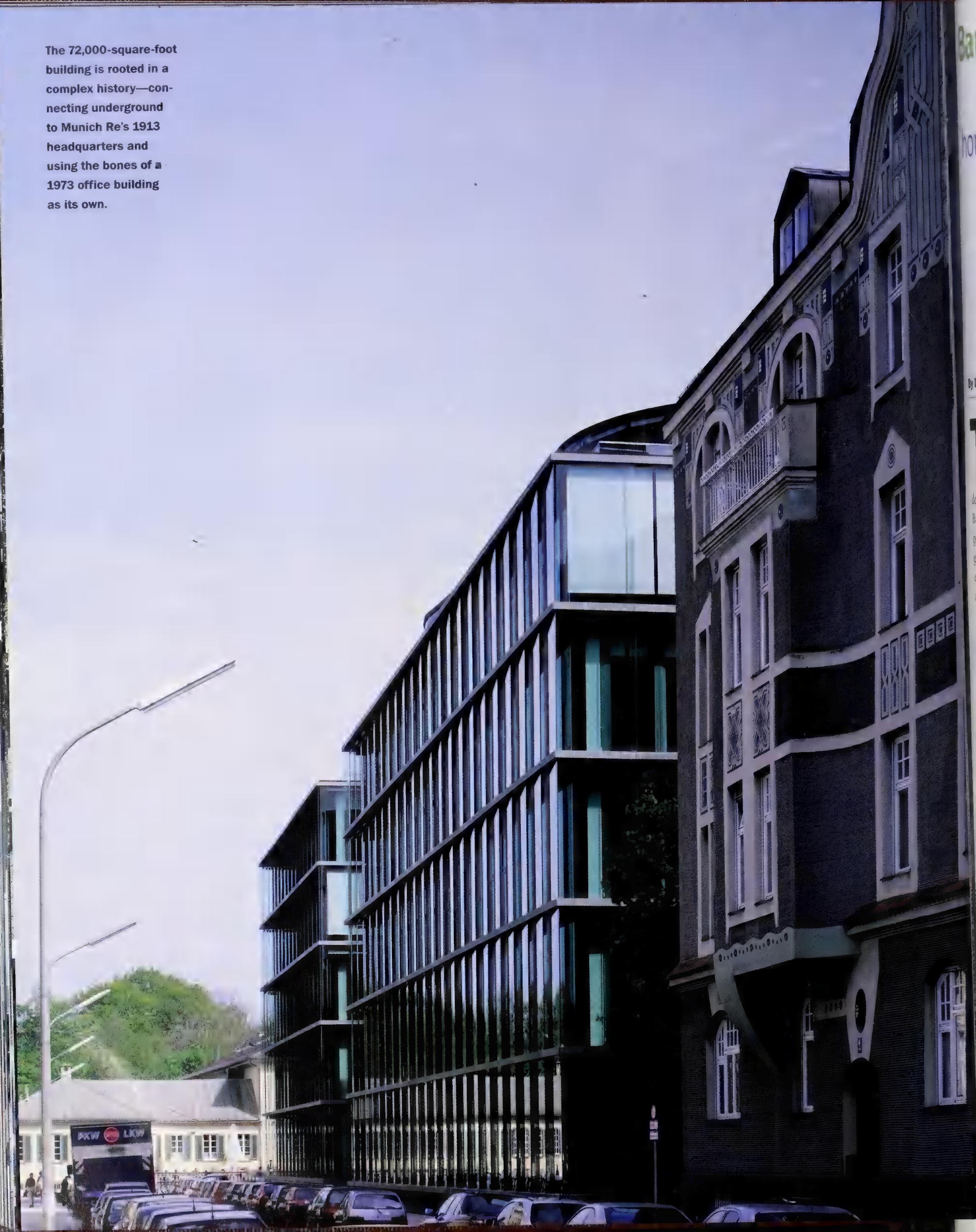
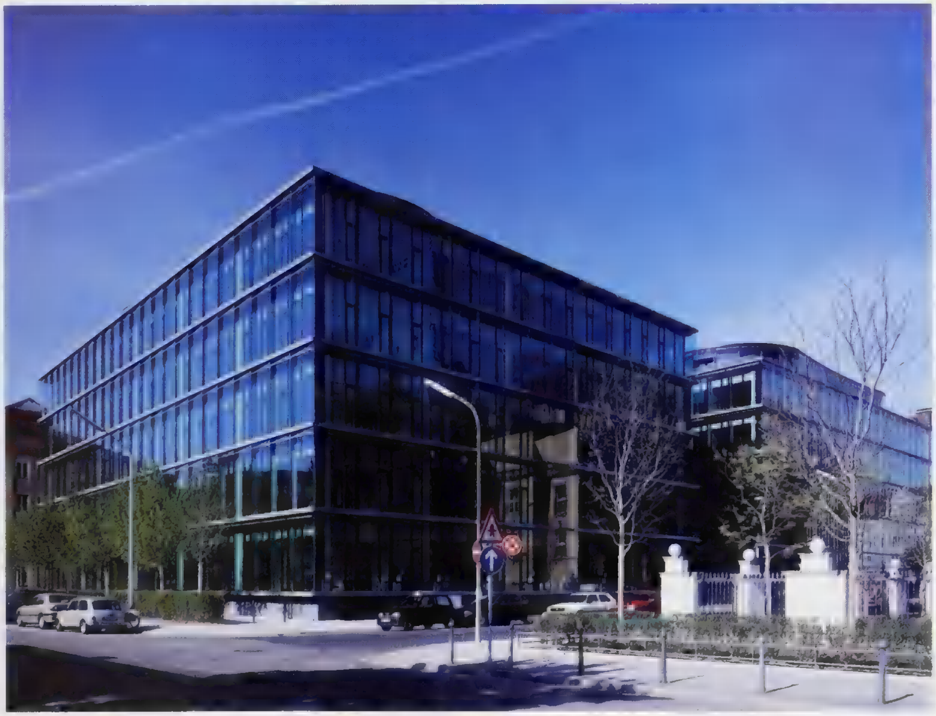


The 72,000-square-foot building is rooted in a complex history—connecting underground to Munich Re's 1913 headquarters and using the bones of a 1973 office building as its own.

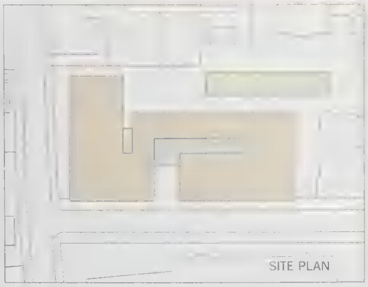
Baumschlager + Eberle transformed a nondescript office building from the 1970s into a sleek corporate home for **MUNICH RE** that is filled with art



By David Cohn

The seductive glass skin of a small corporate office building in Munich offers a good introduction to the holistic approach to design of its architects, the Austrian firm Baumschlager + Eberle. Like the building in general, the deceptively simple skin integrates discrete fields—art, architecture, and environmental engineering—into a pleasing and coherent work.

The glass forms the outer layer of a double curtain wall. In material terms, it is breathtakingly minimal: nothing more than laminated sheets of clear glass running between thin horizontal bands of green dolomite stone, with no mullions or framing, supported only by silicone-sealed slots in the stone. The sheets are angled slightly in plan and overlap. The open joints between them are precisely sized to allow ventilation for the operable windows on the inner wall while maintaining the skin's insulating value (and keeping out pigeons). Due to its thickness, the glass repels solar heat during the day, and its rippled surface shatters the reflections of its surroundings. At night, strips of pale white light set on the edges of each sheet, in an installation by Danish artist Olafur Eliasson, glow and fade across its length in subtle pulses and waves, "like curtains rolling in the wind," according to Bernhard Demmel, an associate with the architects.



SITE PLAN

The building behind this seductive screen is actually a luxurious makeover. Munich Re, Germany's largest reinsurance company, launched a limited competition in 1998 to gut and rebuild the outdated speculative office building on the site, which it had erected in 1973. Known as South 1, the building is located across the street from the company's palatial headquarters of 1913, in an elegant, mostly residential neighborhood facing Munich's English Garden. Munich Re wanted to improve the image and performance of South 1 while retaining the original structure in order to maintain its underground parking, a feature no longer permitted in the area by local zoning. Competing among 10 German and Austrian firms, Baumschlager + Eberle (which is based in Liechtenstein) won the

---

Project: *Munich Re South 1, Munich, Germany*

Architect: *Baumschlager + Eberle—Carlo Baumschlager, Dietmar Eberle, principals; Eckehart Loidolt, Christian Tabernigg, project architects; Marlies Sofia, Bernhard Demmel, Daniela Weber, Marc Fisler, Elmar Hasler, Alexia Monauni, team*

Engineers: *FSIT-Friedrich Strass (structural); OvM-Oskar von Miller (electrical); GMI-Gasser & Messner Ingenieure (HVAC)*

Consultants: *Vogt Landschaftsarchitekten (landscape); P.I.-Projekt Innovations (media)*

Construction management: *BIP Beratende Ingenieure*

David Cohn is RECORD*'s Madrid-based correspondent and the author of* Young Spanish Architects, *published by Birkhäuser in 2000.*

Curving glass penthouses on the top building (below and opposite, top) contain conference rooms and executive offices.

The architects and landscape designers wove a new courtyard into the office block (near left), creating a rich connection between old and new construction (far left). A double glass skin provides tempered air space between indoors and out (opposite, top).

commission by proposing radical cuts and additions to the structure, transforming the monolithic slab into an elongated S-shaped volume that brings interior offices and corridors closer to daylight.

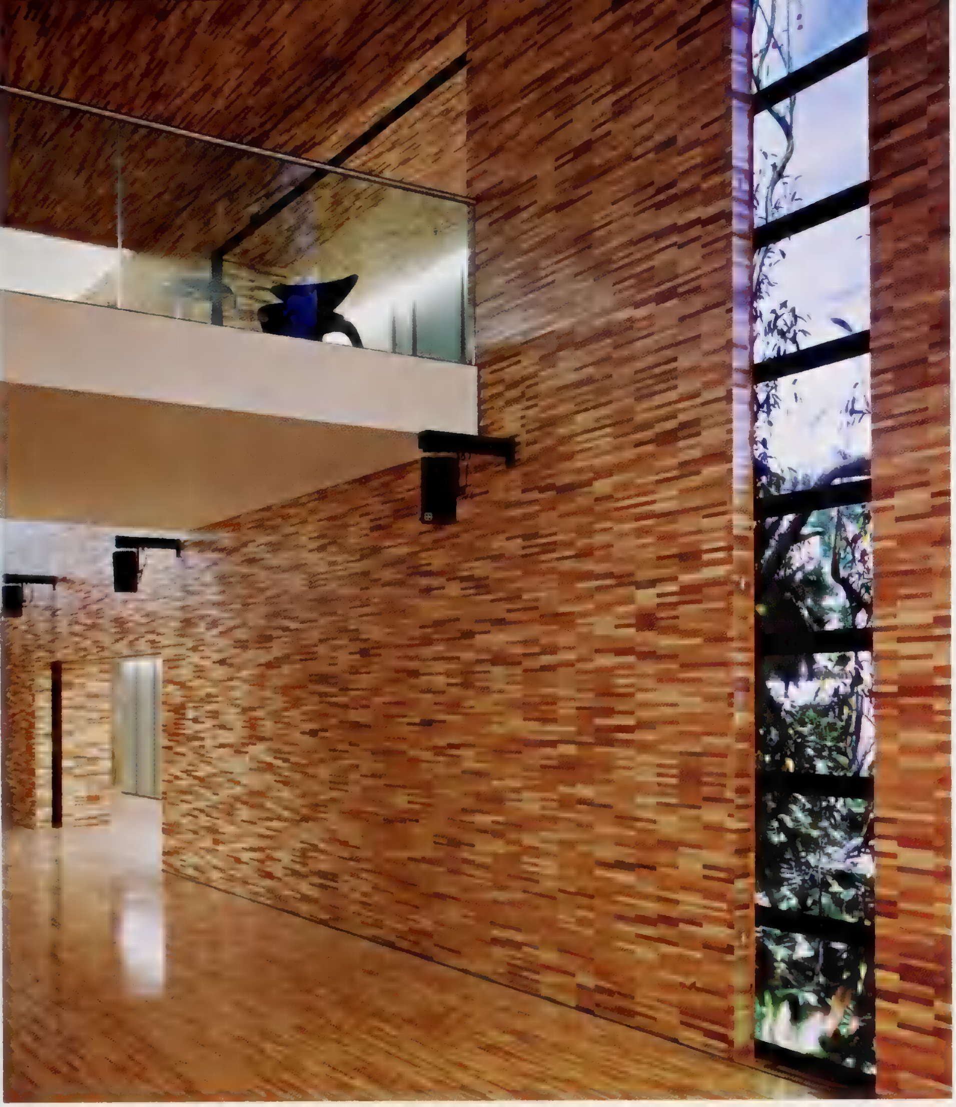
The architects' first gesture made the building work better contextually: a deep gash that breaks the main facade on Gedon Street into smaller masses, in keeping with the street-wall rhythm of the early 20th-century apartment buildings on the rest of the block. This recess marks the entrance, which opens into a double-height hall, 180 feet long, that receives daylight from a central light court above it and a second cut in the rear of the building. The court was created by demolishing an entire section of the original structure and rebuilding it a few feet closer to the center of the block. It is largely lined with single-loaded corridors and is crossed at one point by delicate glass-walled bridges. Finally, the architects topped the structure with two curving penthouses that contain conference rooms and executive offices.

The interior finishes are as sumptuous as the exterior. For the offices and corridors, the architects developed partitions of translucent glass panels with integrated wiring and full acoustic isolation, so cunningly designed that door frames virtually disappear. They finished some

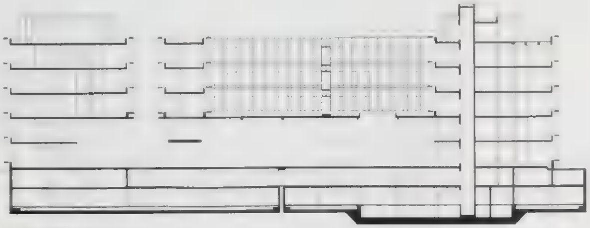
surfaces in support areas in a multitoned parquet of Canadian maple and dressed the double-story main hall entirely in this material, so it suggests a solid wood container. And thanks to audio-visual equipment integrated into the walls, the client can use one end of the hall for concerts and other events.

The architects' indefatigable detailing sweeps away all kinds of visual clutter. Sprinkler heads and access panels virtually recede from view. Supply and return air grilles in most rooms run along the joints where walls meet floors and ceilings, while those in corridor ceilings are integrated with continuous tube lighting. Where necessary, the parquet is perforated for better sound absorption.

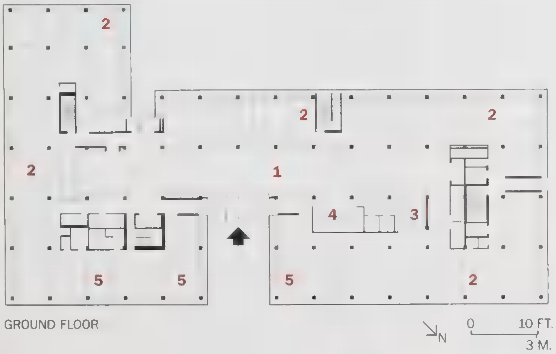
Baumschlager + Eberle originally developed the building's transparent exterior to compensate for the narrowness of the offices themselves, a legacy of the existing structure and Munich Re's policy of giving employees private offices. In an ingenious detail, the architects actually set the exterior glass on the cantilevered ledge of an interior parapet wall, creating a pocket on the floor below that houses the motorized sun shades and offers protection from glare. Operable windows and shades give occupants a measure of control over their working environment. Radiant water-based heating and cooling under the floors regulates the building's indoor temperatures.



A stone wall at the main entrance to the building was injected with moss to give it a weathered look (opposite, bottom). In the main lobby, an art piece works like a cuckoo clock, opening a vertical panel once an hour to reveal a column of plasma screens (right).

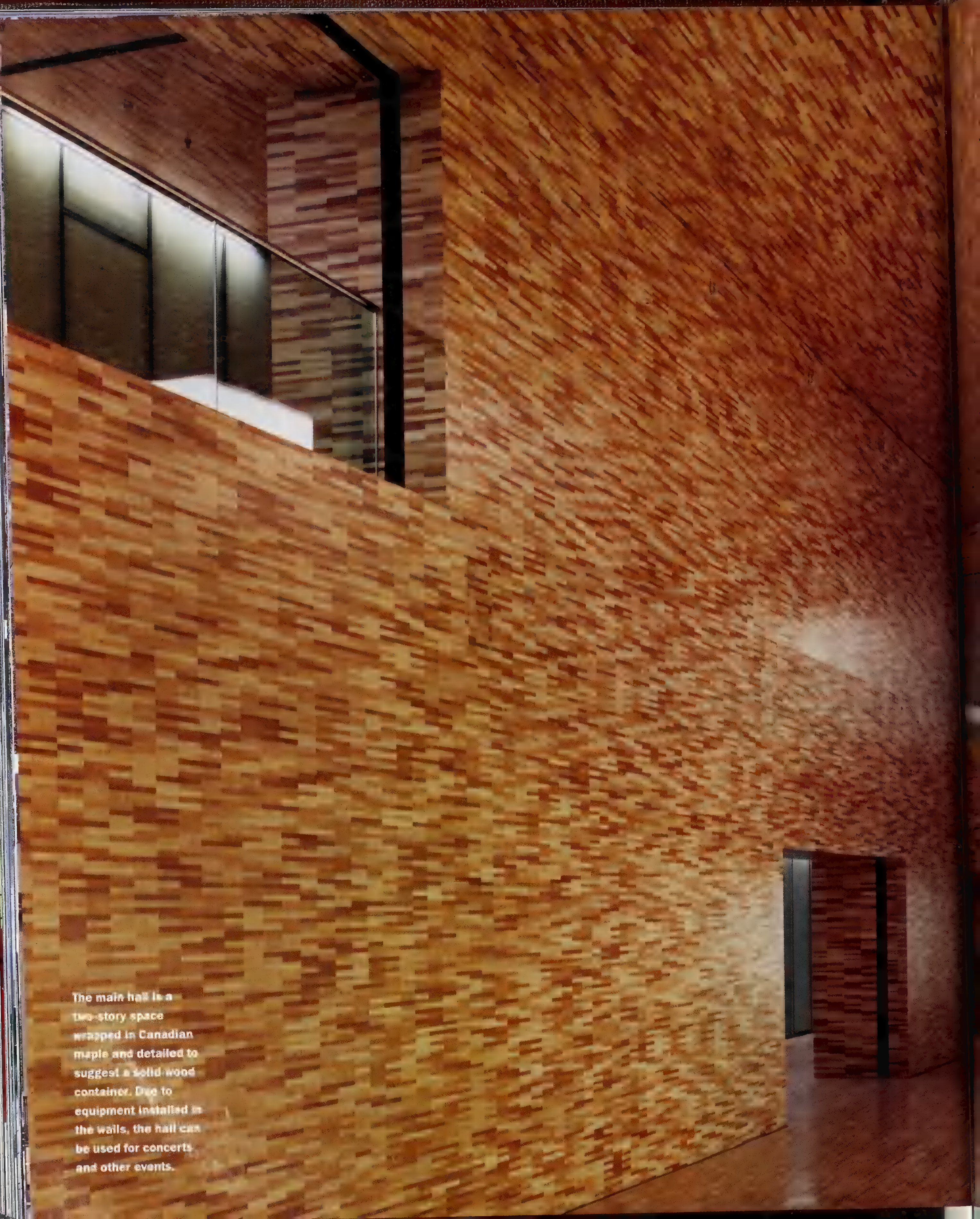


EAST-WEST SECTION

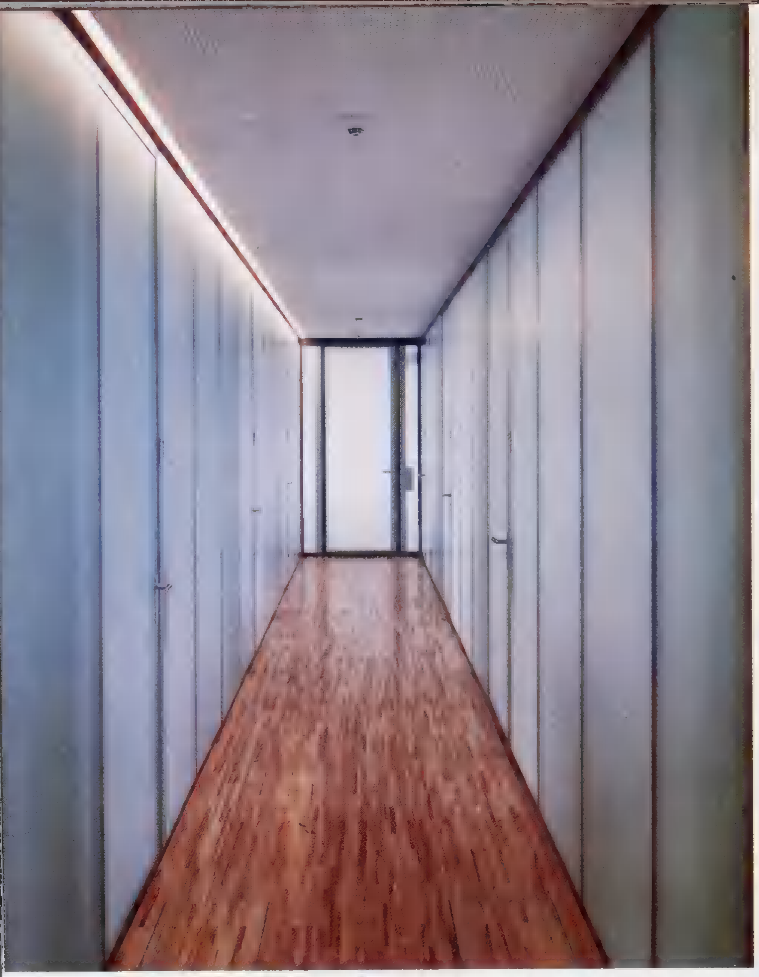


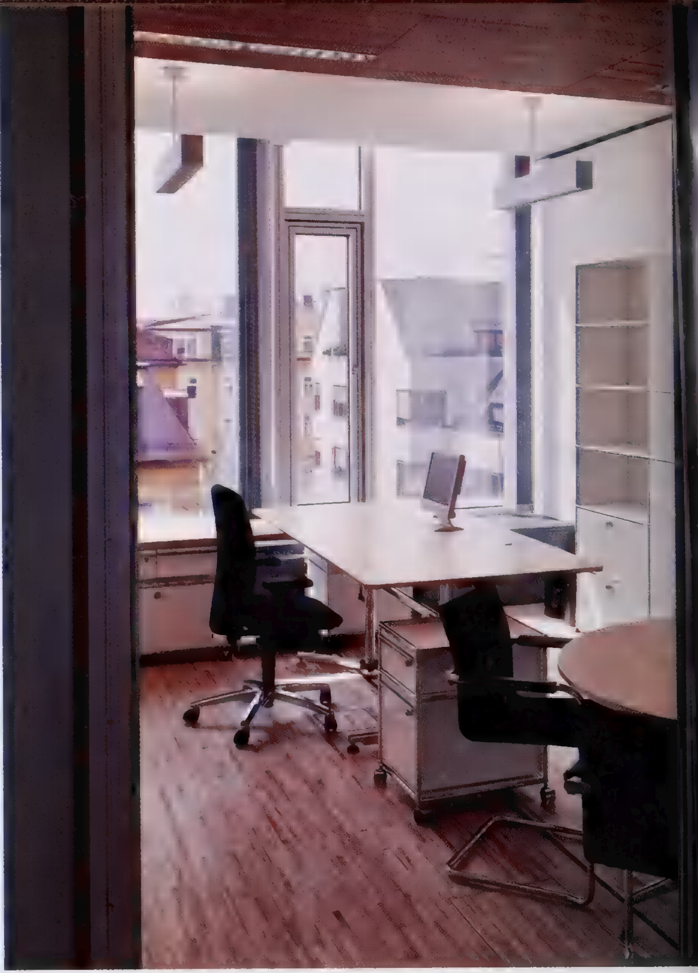
GROUND FLOOR

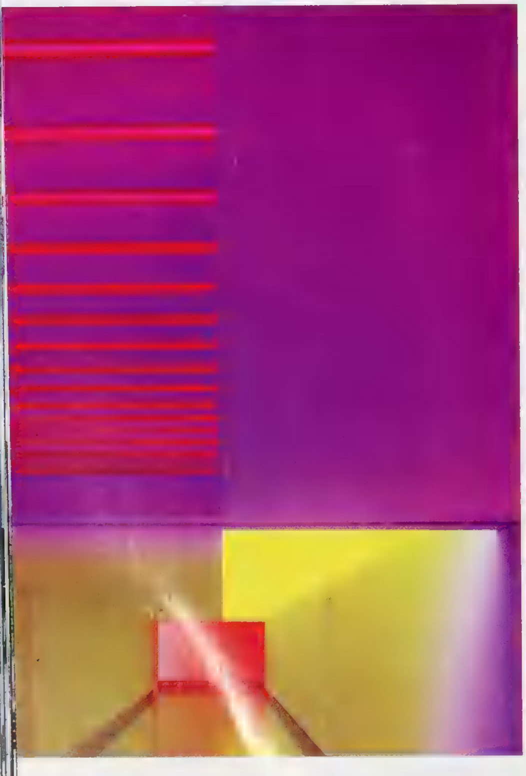
1. *Lobby*
2. *Office*
3. *Kitchen*
4. *Café*
5. *Conference*



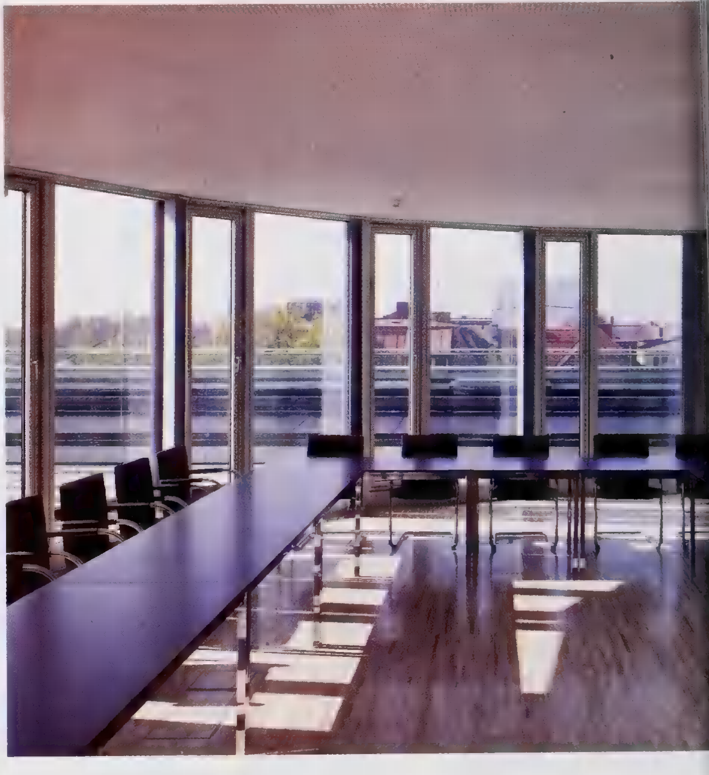
The main hall is a two-story space wrapped in Canadian maple and detailed to suggest a solid-wood container. Due to equipment installed in the walls, the hall can be used for concerts and other events.

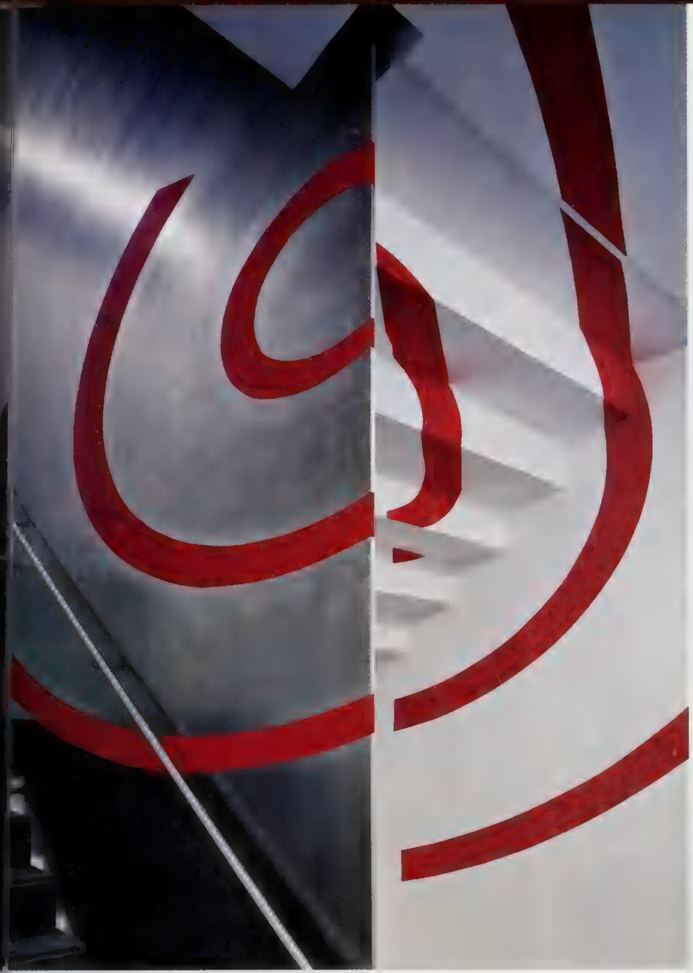






In office corridors, the architects integrated wiring into translucent glass panels and inserted continuous tube lighting at the ceiling (above left). A conference room in a penthouse and all offices have operable windows (right and above right). A program of artworks enlivens spaces such as fire stairs (opposite) and even a tunnel leading to the corporation's headquarters building (left).





In these discrete and disciplined architectural surroundings, artworks and landscaping provide points of color and intensity. Munich Re first turned to artists some years ago to relieve the monotony of the underground corridors that connect the buildings it occupies in the area. In this spirit, it called on New York artist Keith Sonnier to animate the underground corridors radiating from the new building. [ARCHITECTURAL RECORD, September 2002, page 110.] Working with the architects, Sonnier grouped banks of blue, yellow, and red neon tubes in the passages to create dazzling effects of light and color. For the fire stairs of the new building, artists painted walls and ceilings in strong graphic designs, including the dizzying perspectival illusions of Swiss artist Felice Varini and Peter Kogler's computer-generated organic forms. Swiss landscape architect Gunther Vogt, who often works with Baumschlager + Eberle, used chives as a decorative planting on the rooftop terrace and designed a rear garden with small pools of flowing water and maple trees.

In addition to the pulsating lights of the facade, Olafur Eliasson worked with Vogt to develop a wall of moss-covered stone that presides over the main entrance. The moss is cultivated on porous Italian tufa, creating an organic yet precise surface that softens the hard mineral texture of the building. The most elaborate of the artworks, by local artists Marc Weis and Martin De Mattia of M+M, resides in the entry hall. Once an hour, a floor-to-ceiling panel opens automatically in one of the walls, revealing a column of plasma screens that depict a computer-generated landscape under different weather conditions, a simulation developed with experts in climate and technology. The panel teasingly closes again after just one minute, in an update of the famous performing figures in the clock tower of the Munich town hall. In each of these interventions, artists and architects worked together to integrate the artworks with the design as a whole.

With its remarkable transformation of the 72,000-square-foot South 1, Munich Re dedicated its entire investment—$35 million, or $485 per square foot—to improving the quality of the building. South 1's previous technical obsolescence created an opportunity to address its other deficiencies, in terms of urban responsiveness, human comfort, and the image of the company in the neighborhood, and to enhance the company's cultural prestige in the larger community. One could say that the original South 1, built according to the more limited calculus of financial gain of 25 years ago, had actually accumulated substantial debts—to the company's employees, the neighborhood, and the environment as a whole—causing real damage to Munich Re's image and good name. What Baumschlager + Eberle's project shows is that quality design is more than mere luxury; it is a necessity. ■

Sources

Curtain wall and steel: *Dobler Metallbau GmbH*

Weathered stone: *Steinwerke Rudolph GmbH*

Wooden floors, walls, entry-hall ceiling: *Stonner GmbH*

Glass office partitions: *Intek GmbH*

Office furniture: *Svoboda GmbH*

Reception furniture: *Möbel Bauer GmbH*

General lighting: *Hartmann & Unger*

For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

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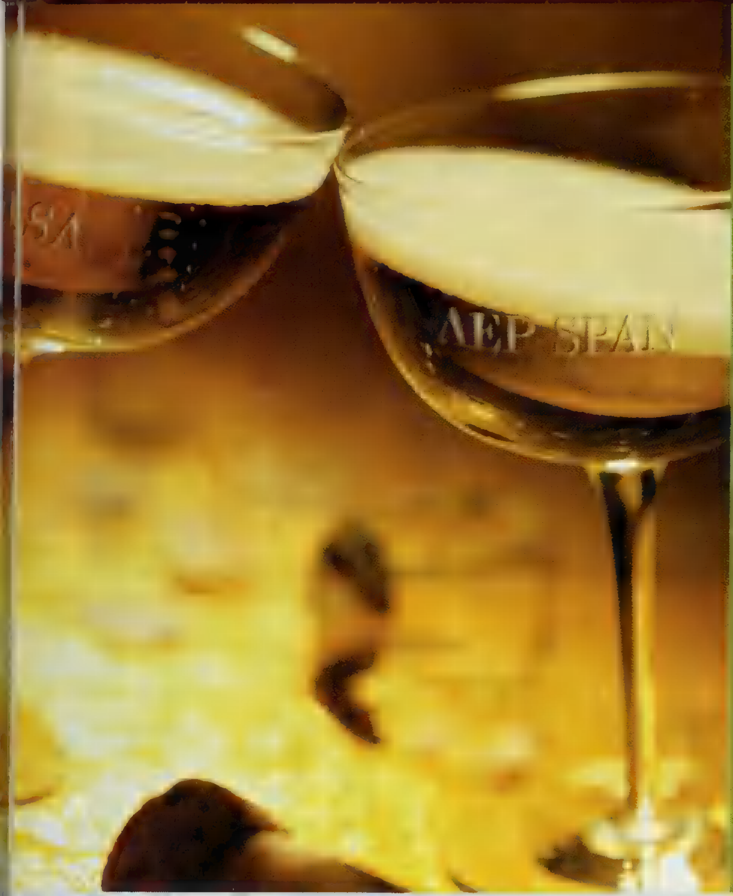

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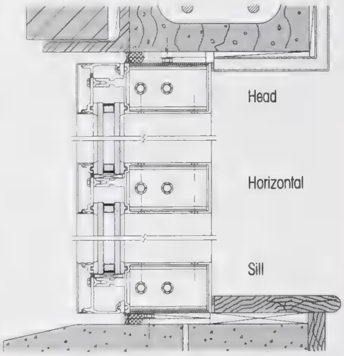

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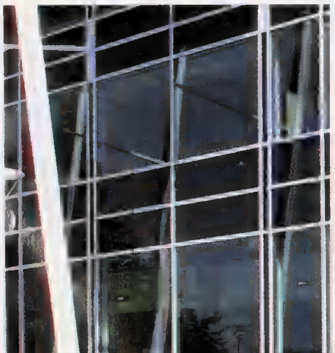

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RETAIL

Shop (Up)Lifting

DESPITE THE PROLIFERATION OF OVERSIZE AND UNDER-DEVELOPED BIG BOXES, ARCHITECTS ARE DESIGNING STORES THAT IMPROVE THE URBAN ENVIRONMENT.

1.

New York City

Bohlin Cywinski Jackson provides Apple Computer disciples a light-filled treasure chest for everything Mac and more.

2.

New York City

Duccio Grassi takes full advantage of a rare open site and delivers a dramatic showroom for Italian designer MaxMara.

3.

Tokyo, Japan

No mere big box for merchandise, Renzo Piano Building Workshop has given Hermès an elegant headquarters and Tokyo an architectural gift.

By Sara Hart

Shopping is the only public diversion that crosses almost all socioeconomic and ethnic lines. The experiences, however, can be quite different. Ubiquitous discount retailers like Target, Wal-Mart, Kmart, and Home Depot have become one-stop destinations for suburbanites. These retailers' "superstore" versions, in which one can practically observe the curvature of the earth, make the "big box" modifier seem like a mocking understatement, code for stating the obvious—the absence of architecture. The chichi variant of the superstore can be found at tony addresses in every major city. Haute couture flagship stores continue to compete for attention everywhere, despite serious economic turbulence. Flagships have spawned countless boutique outposts in posh neighborhoods, and the high-end merchant's vision often transforms the surroundings and the experience of not only its customers, but of the local community, as well.

So apparently fraught with deep cultural meaning is the prevalence of shopping as a global pastime that it prompted students at Harvard University's Graduate School of Design (GSD) to analyze in exhaustive depth the social and cultural factors that are responsible for shopping superseding other leisure-time activities. They published their conclusions in *The Harvard Guide to Shopping* (Taschen, 2002), under the guidance of architect, polemicist, and GSD professor Rem Koolhaas.

Rem knows retail, having designed the attention-grabbing Prada "epicenter" in Manhattan's SoHo [RECORD, February 2002, page 84]. If SoHo has become a mall, then Prada is the anchor tenant. Two new merchants joined Prada in this retail ganglion. Both stores are beautifully executed in glass, steel, and wood. The Italian fashion house MaxMara got to start with a clean slate, building from the ground on a former parking lot. Around the corner, Apple Computer's new retail store is a light-filled, magically weightless volume tethered to the ground by the sturdy brick envelope of a former post office. MaxMara's spare serenity and Apple's spare effervescence give a kinetic vitality to the streets previously occupied by unanimated art galleries with far less mass appeal. Halfway around the world, Hermès has made a similar contribution, although at a much grander scale. The French purveyor of luxury clothes and accessories introduces some urban class into Tokyo's meretricious Ginza district with a corporate and retail center that seems to radiate optimism and taste.

These three conscientious projects may seem to be exceptions that prove the grim prognosis of Koolhaas et al., but then there are 10 others on our Web site that further suggest that where there is good design, cultural diversity will survive in spite of the shoppers. ■

WWW For additional retail projects, and more information on the people and products involved in the following projects, go to Building Type Study at **architecturalrecord.com**.

Apple Store
New York City, SoHo

1

BOHLIN CYWINSKI JACKSON'S NEW RETAIL STORE FOR APPLE COMPUTERS IS AS SPARE AS THE COMPANY'S NEW AD CAMPAIGN.

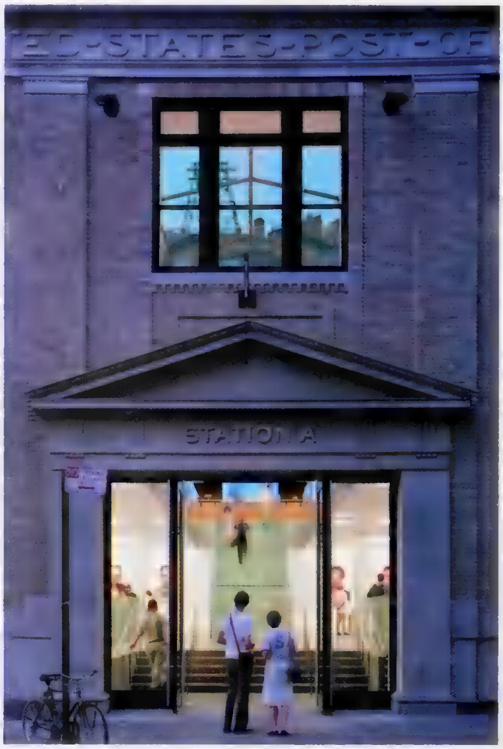
By Raul A. Barreneche

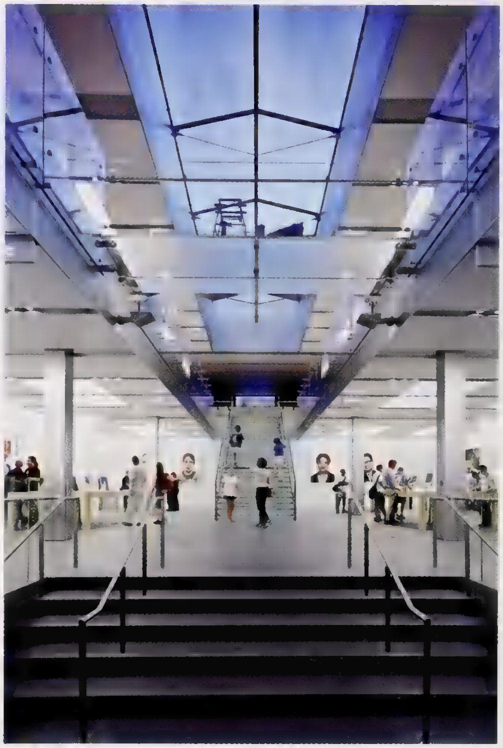
Architect: *Bohlin Cywinski Jackson—Peter Q. Bohlin, FAIA, design principal; Jon C. Jackson, AIA, principal in charge; Karl A. Backus, AIA, project manager; Rosa Sheng, project architect; Ben McDonald, Colleen Caulliez, Michael Waltner, design team*
Associate architect: *Ronnette Riley Architect—Ronnette Riley, FAIA, principal in charge; Mark Brungo, project manager; Yumi Moriwaki*
Client: *Apple Computer*
Consultants: *Dewhurst Macfarlane & Partners with Goldreich Engineering (structural); Flack & Kurtz (MEP); ISP Design (lighting); Eight (fixtures); Emmaco Prentiss (security/data/AV)*
General contractor: *J.T. Magen*

Size: *17,000 square feet*
Completion date: *July 2002*

Sources
Structural-glass specialties: *Seele Gmbh/Seele USA (glass and stainless-steel contractor); Tripyramid Structures (stainless-steel design); Depp Glass (glass treads/landing); Installite Glass (fritted-glass partition panels)*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

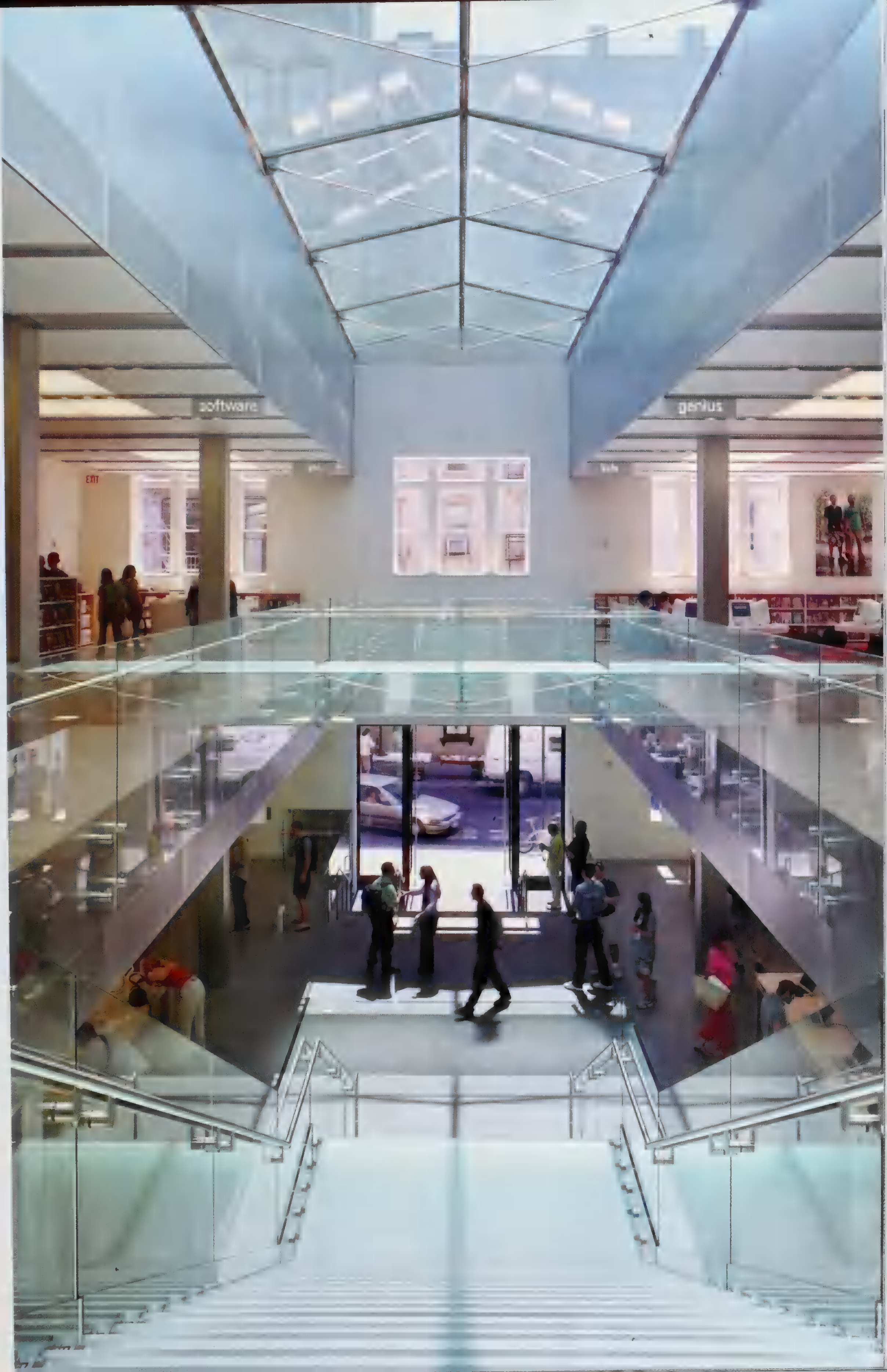


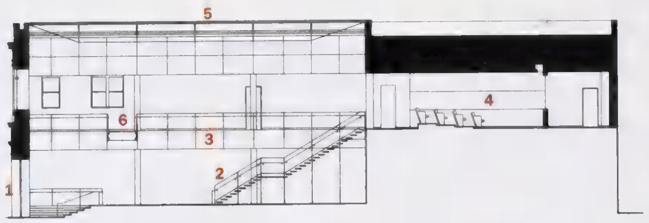


Apple, the company that has been revolutionizing personal computing for three decades, just opened its first retail shop last year. But the company is quickly making up for lost time, opening 31 stores nationwide over the past 18 months. In July, Apple christened its 32nd store, its largest to date: a vast, 17,000-square-foot, two-story shop in Manhattan's SoHo, just one block west of Rem Koolhaas's much-hyped Prada "epicenter." Another flagship opened in Los Angeles a few weeks later, and a third landmark store will open on Chicago's Michigan Avenue next spring.

Apple's charismatic C.E.O. and founder, Steve Jobs, tapped architects Bohlin Cywinski Jackson (BCJ)—who designed Apple's industrial-design studios and the headquarters of Jobs's animation venture, Pixar—to transform a 1920s post office into a sleek, simple yet high-tech emporium. According to Ron Johnson, Apple's vice president of retail, he and Jobs gravitated to the pale brick post office, which most recently housed a Restoration Hardware store, because of its rigor and simplicity—virtues shared by Apple and evident in its creative output. "It was also one of the few standalone places in SoHo where we could control the building's design," says Johnson. Manhattan architect Ronnette Riley, FAIA, who helped design the short-lived Restoration Hardware, served as architect of record on the store.

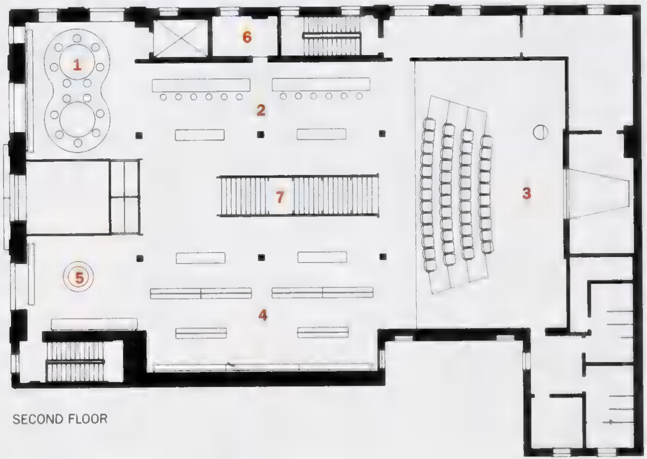
Shoppers pass through the renovated entrance of the former post office (opposite, left) and into the slick, aqueous world of Apple SoHo (opposite, right). A glazed staircase, on axis with the entry, and a delicate skylight overhead direct movement into and through the store (right).





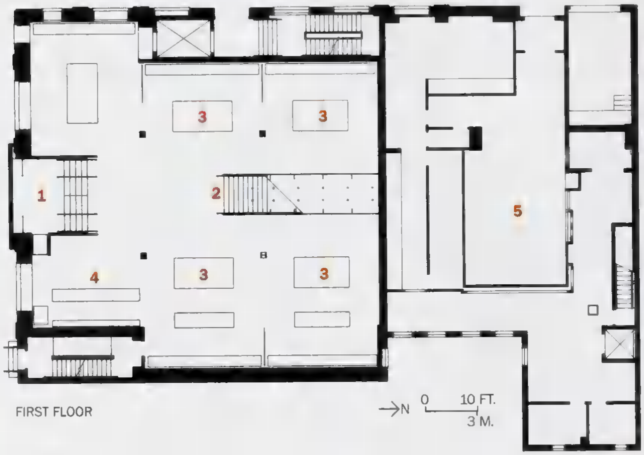
SECTION

1. *Entrance*
2. *Glass stair*
3. *Glass panels*
4. *Auditorium*
5. *Skylight*
6. *Glass bridge*



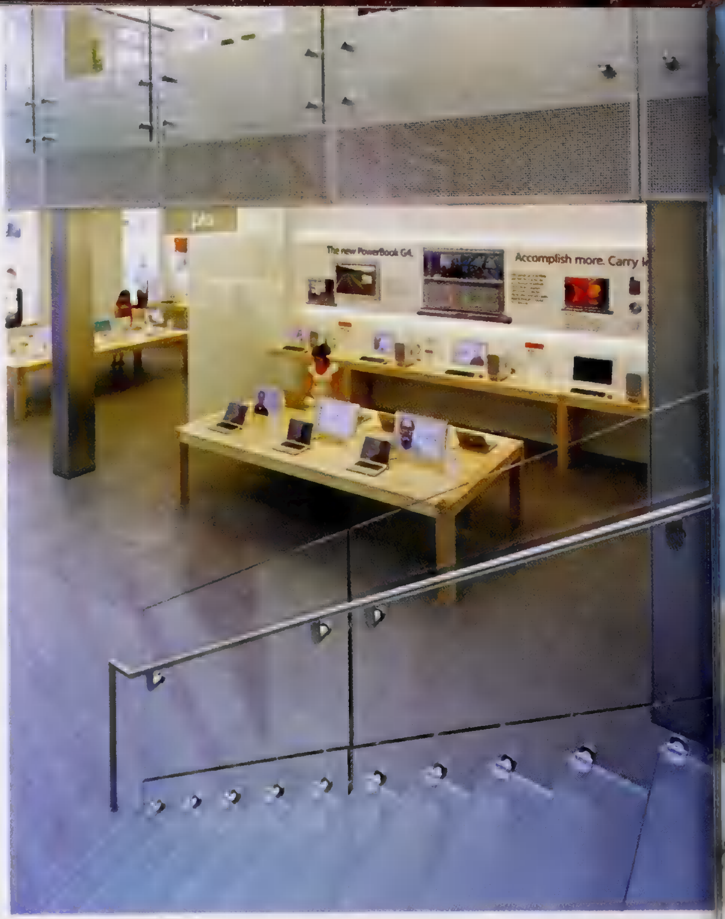
SECOND FLOOR

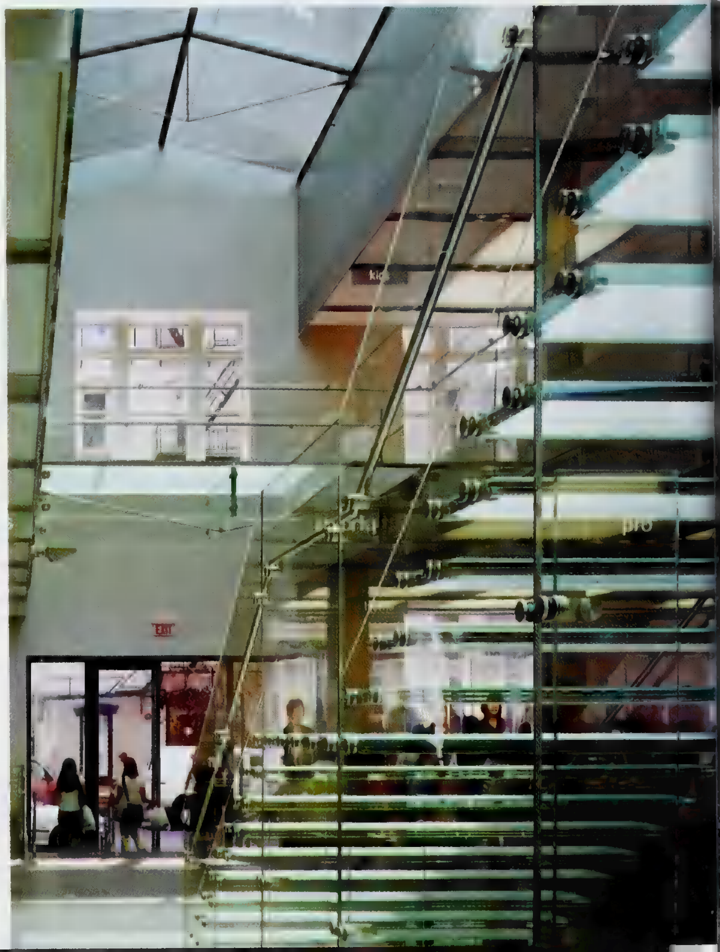
1. *Kids' zone*
2. *Genius bar*
3. *Auditorium*
4. *Software*
5. *Etcetera*
6. *Apple care*
7. *Glass stair*



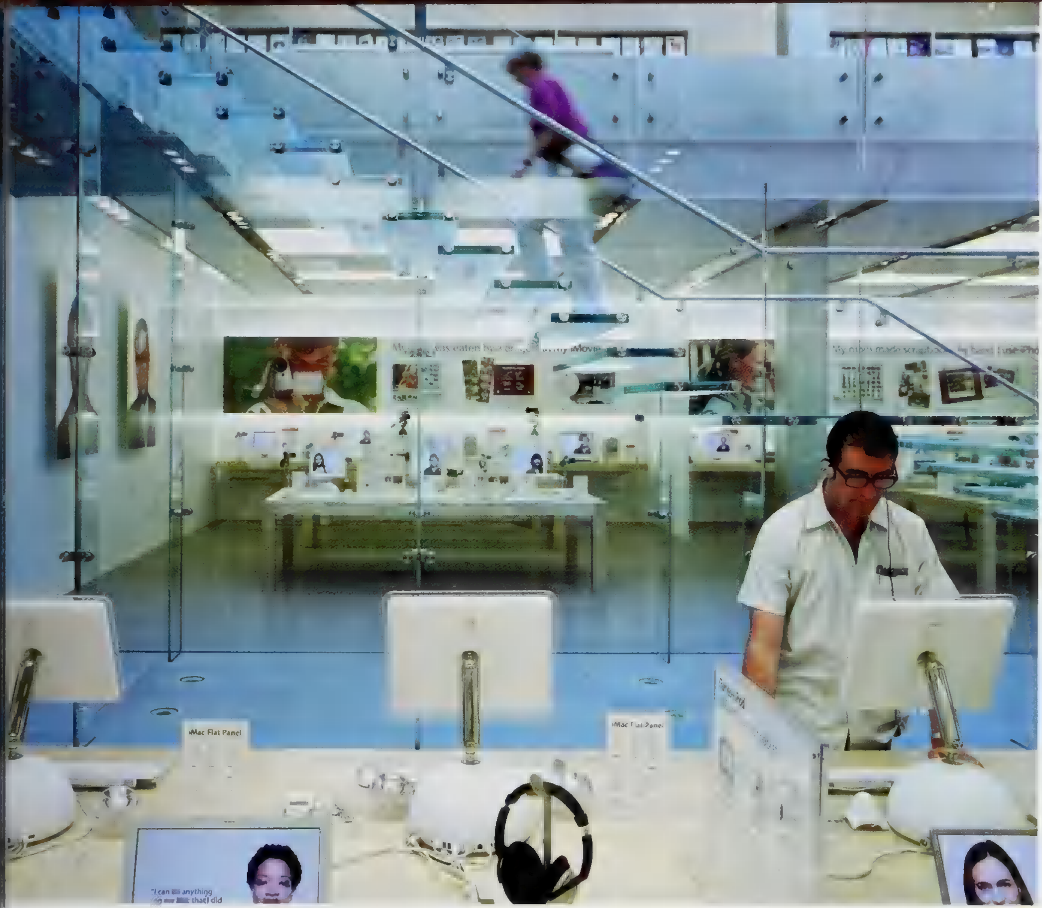
FIRST FLOOR

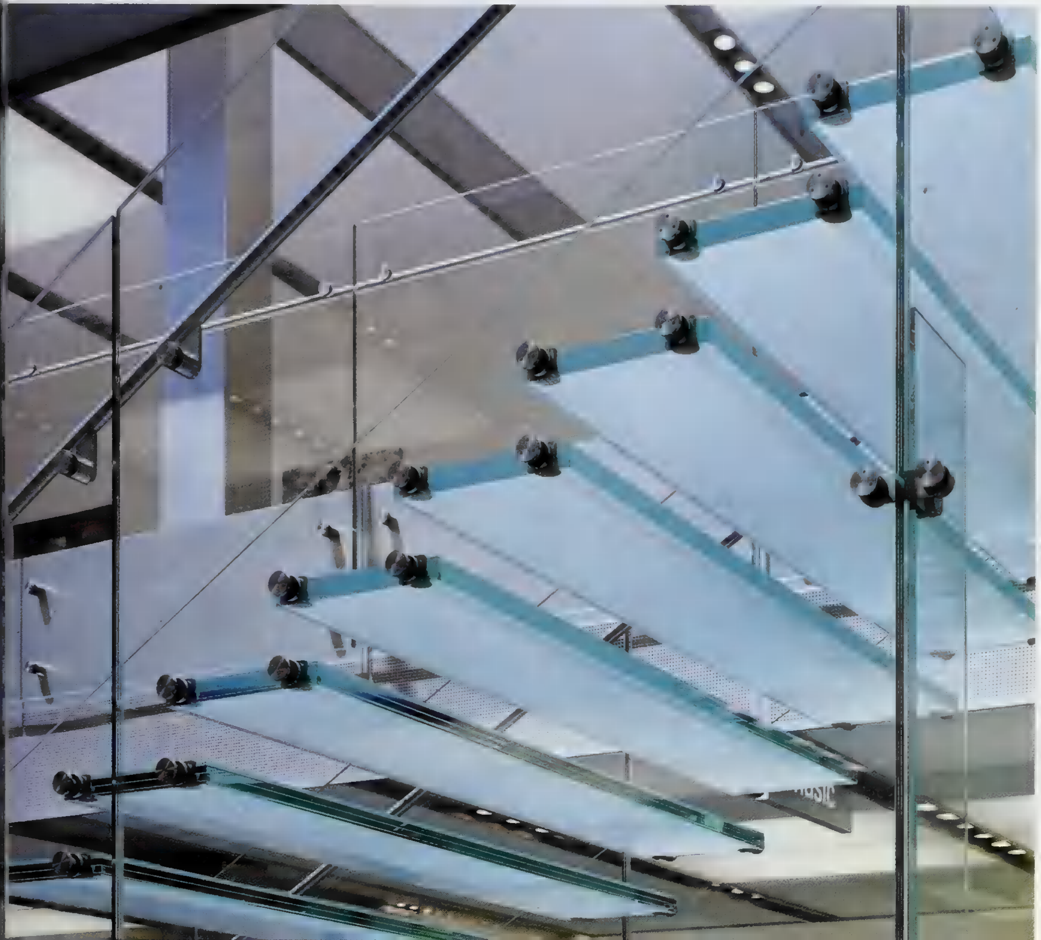
1. *Entrance*
2. *Glass stair*
3. *Product displays*
4. *Checkout*
5. *Storage*





The structural-glass staircase, skylight, and bridge create material continuity and offer unobstructed views throughout the Minimalist shop (right).





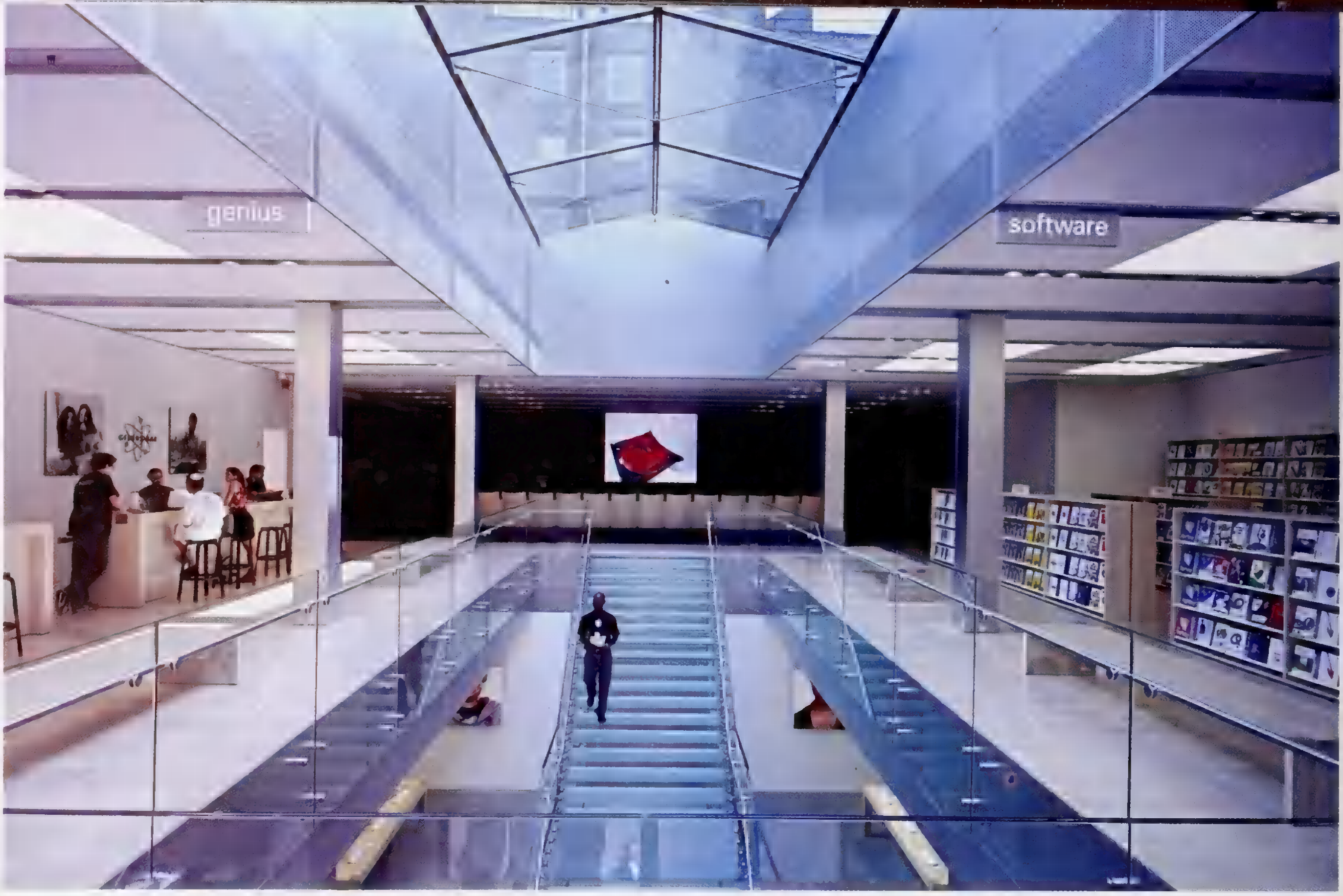
Program

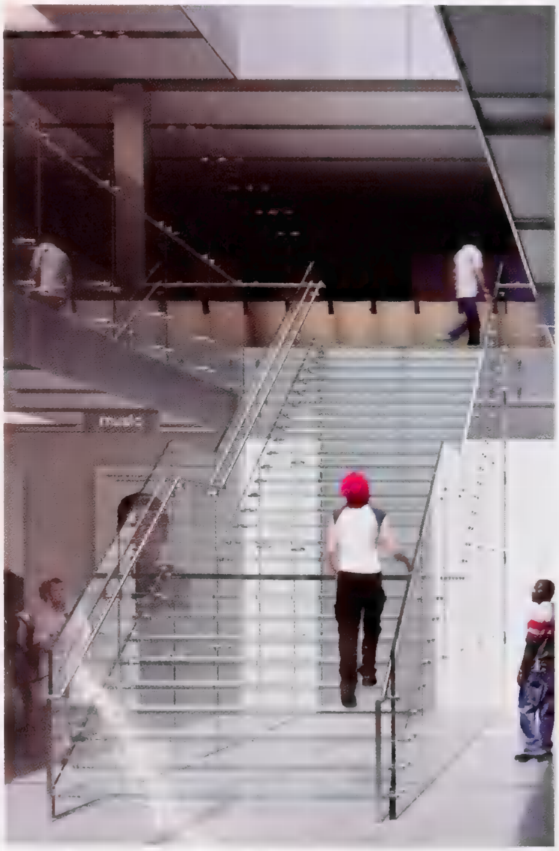
As realized for Apple, on the ground floor, the store contains roughly 5,200 square feet of retail space, divided into "solution zones," in Apple parlance: Photos, Movies, Music, Home, and Pro (office computers). In the solution zones, customers can test flat-screen Macs equipped with the latest animation software, try out digital cameras, or listen to the output of barely-there bubble-shaped plastic speakers. Technical service and diagnostic help are served up at two, 20-foot-long "genius bars" on the second floor, which contains another 4,300 square feet of retail. The upper level also has a kids' area with 12 computer stations; a software department; an area called "etcetera," where iPods, scanners, sub-woofers, and other peripheral devices are sold; and a 45-seat open theater where salespeople demonstrate new Apple products and visitors attend classes and "Made on a Mac" presentations.

Solution

BCJ designed the SoHo store from scratch but also drew on a kit of parts developed in an earlier prototyping exercise led by Jobs that included BCJ, Gensler, the San Francisco design firm Eight Inc., and Johnson. The prototypes established a material palette and standard details to create continuity and a recognizable image among dozens of Apple stores that includes blond maple floors, Corian counters, and modular ceilings with aluminum troughs. BCJ expanded the basic palette for the SoHo space, adding cool gray Pietra Serena stone floors, matte stainless-steel column wrappers, and oversize maple Parsons tables and benches designed by Eight Inc. The materials are all simple and familiar but are executed with a razor-sharp precision that seems appropriate for one of the world's biggest computer makers.

The shop's signature element is a structurally daring staircase of chunky laminated glass treads bolted to supporting structural-glass walls. The stair is placed on axis with the entrance and set beneath a new 70-foot-long skylight defining an





atrium within the two-story shop. In addition to creating a visual landmark, the eye-catching stair fills a functional need: "Getting people upstairs in urban retail is really hard," explains Johnson. "Here, you see the stair and all the natural light and want to walk up."

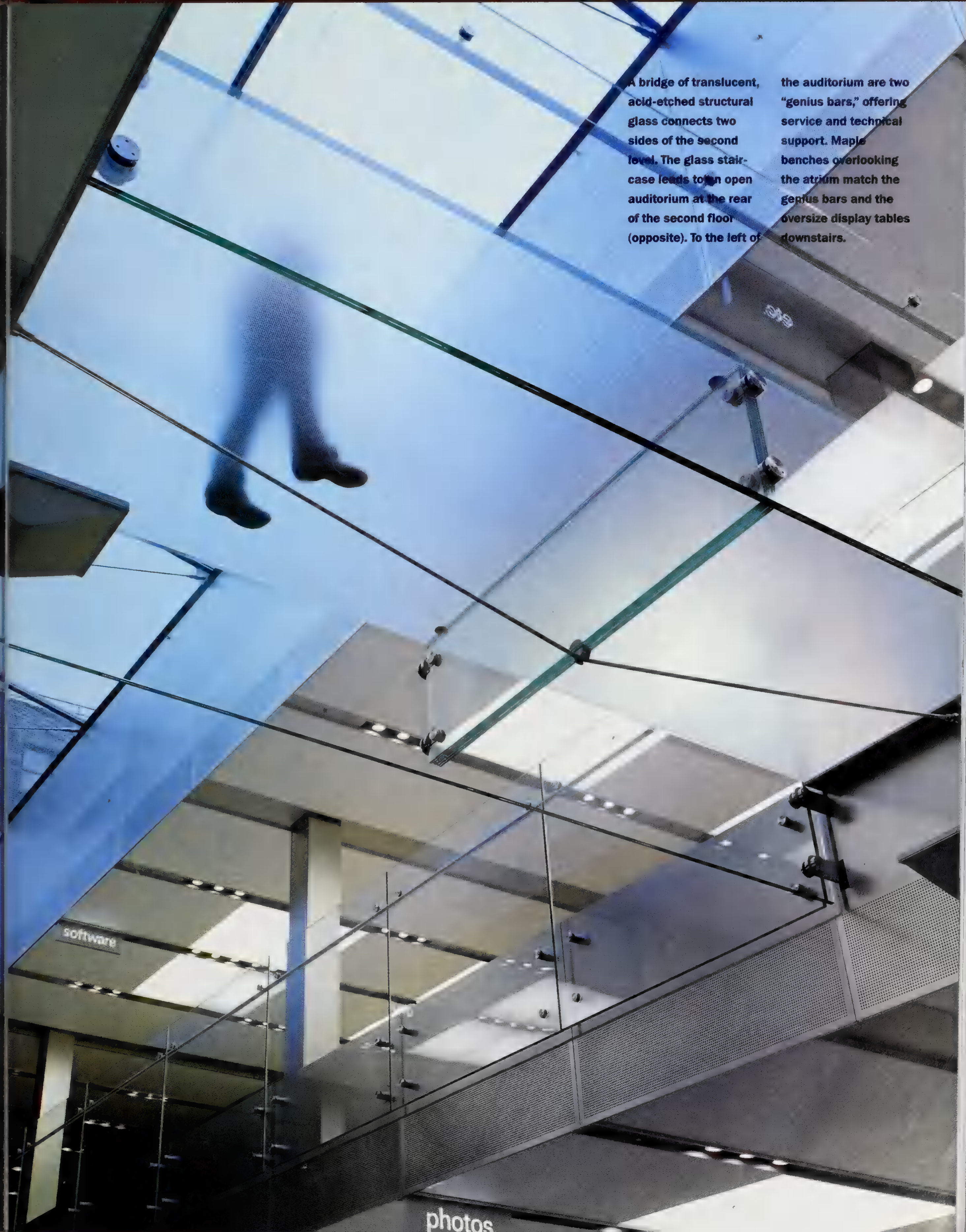
A structural etched-glass bridge connecting the two wings of the second floor—engineered, like the staircase, by the New York office of Dewhurst Macfarlane & Partners—continues the glass theme. "The stair, skylight, and bridge are all of the same family. They're rather elegant and very pure and done with a delicate, almost ethereal spirit," suggests BCJ principal Peter Q. Bohlin, FAIA.

Commentary

The store's design is as flat-footed as the new Apple ads that fill the space, in which real people who switched from PCs to Macs give testimonials about their change of heart. The ads—a far cry from earlier Apple campaigns like the Orwellian blockbuster "1984" spot—are simple and spare, with low-glamour head shots and quotes against a white background. That same forceful, no-nonsense sensibility comes through in BCJ's design. The architecture also echoes something of Apple's sleek, understated new products, like the Titanium PowerBook G4, and the company's new collection of white laptops and desktop Macs.

It's hard not to make at least a passing comparison to Koolhaas's Prada flagship just a block away. Whereas the Prada store thrusts design front-and-center to make grand declarations about global culture and commerce, usually at the expense of the merchandise, Apple's architecture recedes, if not quite to the background, at least to the sidelines. BCJ's design lets the products stand out without clutter or pretense, while still asserting the shop's identity.

So far, Apple's design seems to be paying off. Johnson reports that more than 100,000 visitors checked in during the shop's first 30 days in business. In retail, image counts—but numbers still count for more. ■



A bridge of translucent, acid-etched structural glass connects two sides of the second level. The glass staircase leads to an open auditorium at the rear of the second floor (opposite). To the left of the auditorium are two “genius bars,” offering service and technical support. Maple benches overlooking the atrium match the genius bars and the oversize display tables downstairs.

Max Mara
New York City, SoHo

2

DUCCIO GRASSI CREATES A DRAMATIC SETTING FOR WOMEN'S CLOTHES THROUGH THE BOLD USE OF CONCRETE, WALNUT, AND RUSTED STEEL.

By Suzanne Stephens

Architect: *Duccio Grassi Architects—Duccio Grassi, principal; Fernando Correa Granados, project architect*
Architect of record: *FZAD Architecture & Design*
Client: *Max Mara USA*
Consultants: *O'Dea & Associates (structural and MEP engineers); Isometrix Lighting + Design (lighting)*
General contractor: *Americon Construction/Consulting*
Size: *6,105 square feet*
Completion date: *2001*

Sources
Structural steel: *Maspeth Welding*
Concrete: *La Strada General Contracting*
Panel precasting: *Global Precast*
Skylights: *Bellapart, S.A. (engineering and fabrication)*
Glazing and aluminum framing: *Landmark Architectural Metal & Glass*

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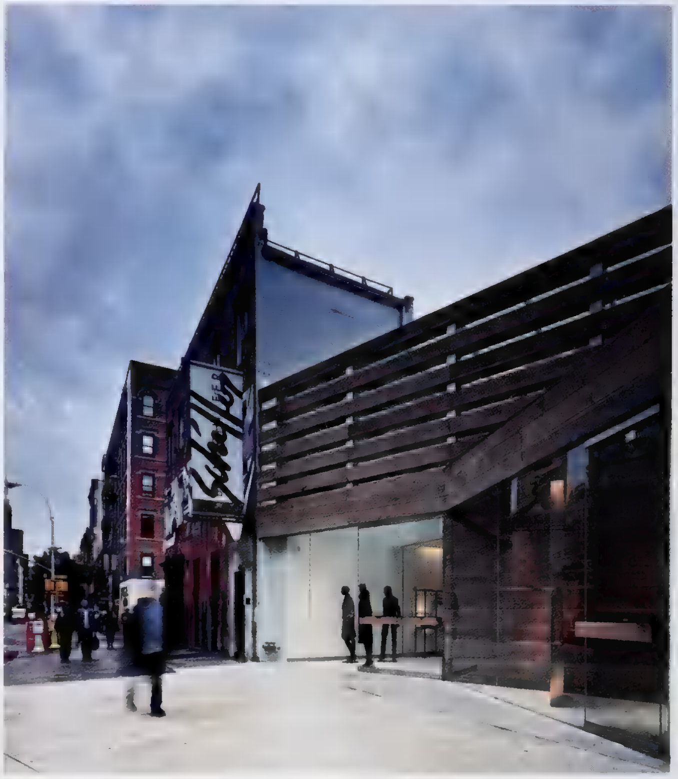
Max Mara, the fashion house based near Milan, is known for a strong geometrical cut in its women's clothes, which also feature a color palette that veers from beige to brown to black, and textures that are as sleek as steel or as nubbly as brick. In other words, the clothes seem to be inspired by architecture. Small wonder the company felt the architectural design of its shop was important to reinforce its style identity.

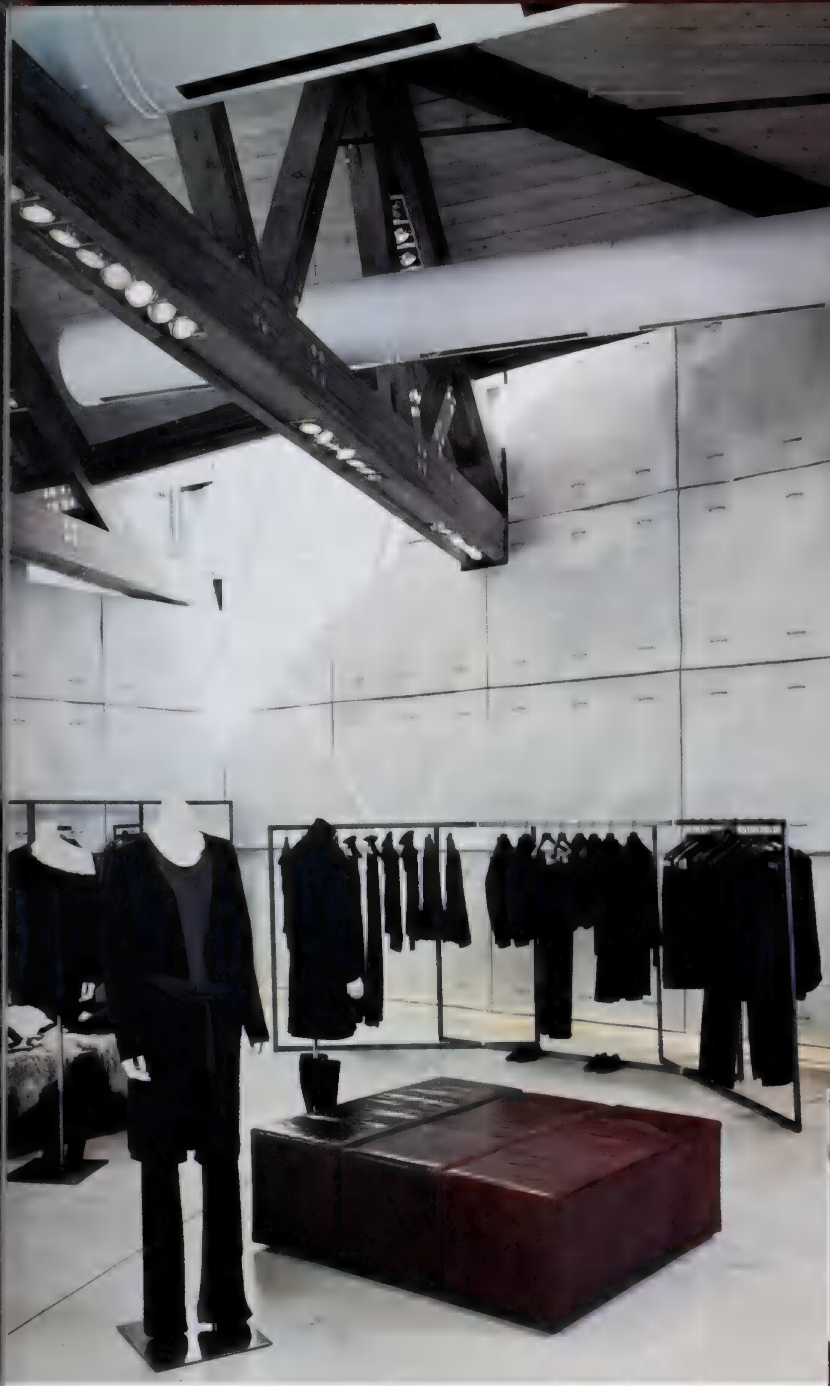
Program

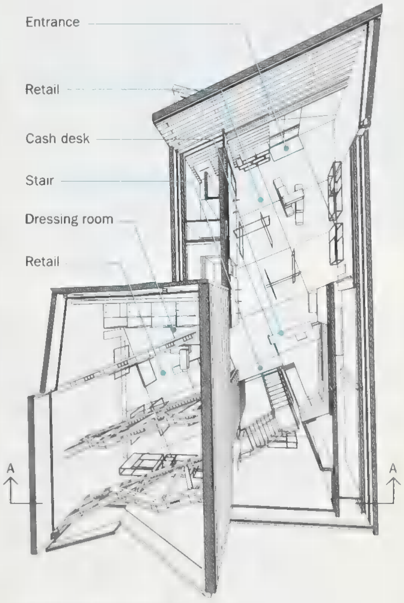
With its new downtown store in New York's SoHo, Max Mara wanted both to grab the shopper's attention and provide a design appropriate to its clothing. Its new, one-story structure is on West Broadway, on a lot leased on a long-term basis, where the Italian office of Duccio Grassi Architects came up with a two-level scheme. In its expansive interior, walnut-laminated trusses and slatted partitions, precast and poured-in-place concrete, as well as rusted and natural steel are deployed through a trapezoidally configured volume.

Solution

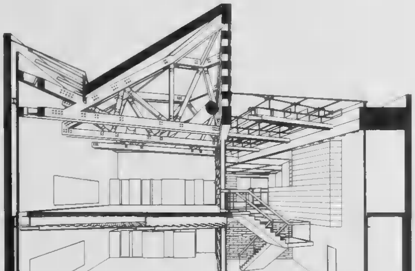


The drama begins on the sidewalk, where a slatted wall 21 feet and 7 inches high, placed on an angle with the building line, directs the visitor to the entrance. As the slanted wall suggests, Grassi organized the interior elements and spaces according to two overlapping grids, one of which shifts 20 degrees off the orthogonal grid established by the L-shaped structure. Meanwhile, the visitor, who may well be oblivious to such maneuvers, meanders through the first retail space, which is 10 feet high, and is gradually drawn to a light well at the rear. Here, a skylighted atrium, with an inserter stair, reveals a lower level devoted to more clothing. Architecture is deployed to heighten the experience of shopping: The only way to access the additional clothing is by detouring through a larger space purveying merchandise, here spanned by three laminated walnut trusses and punctuated by another, smaller skylight. Here, too, the building's concrete-block walls are lined with large panels of precast concrete that ripple like pieces of a quilt and seem sewn together by large stainless-steel cables. Steel channels inserted between the first and second rows of



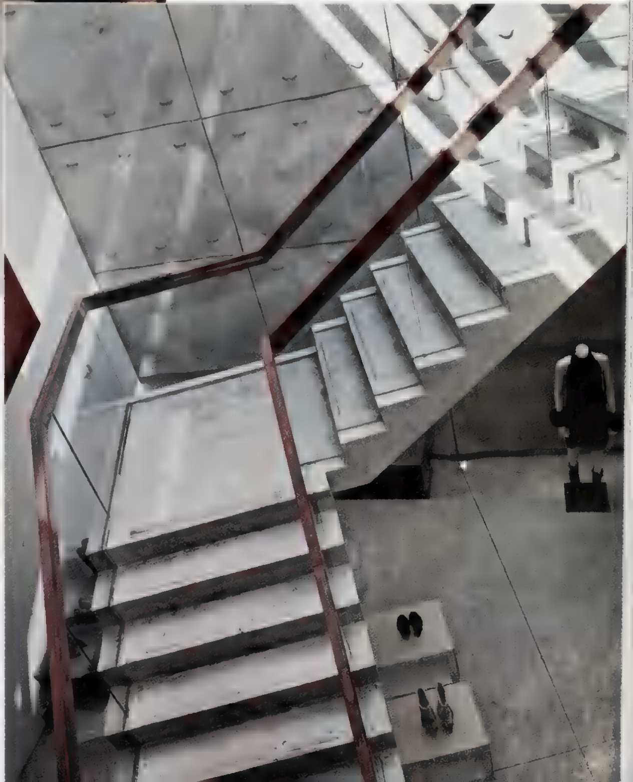


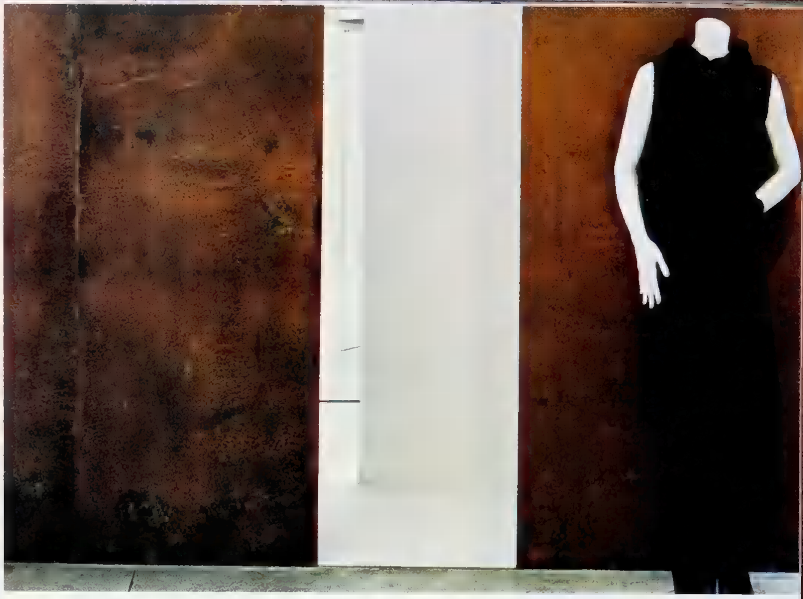
OVERHEAD AXONOMETRIC

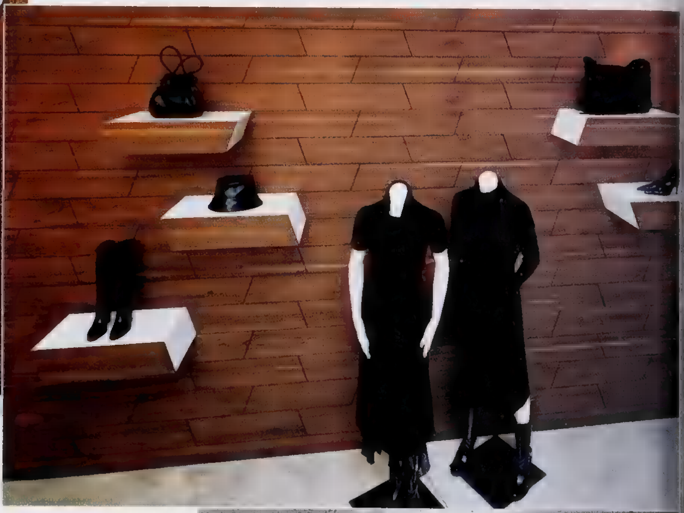


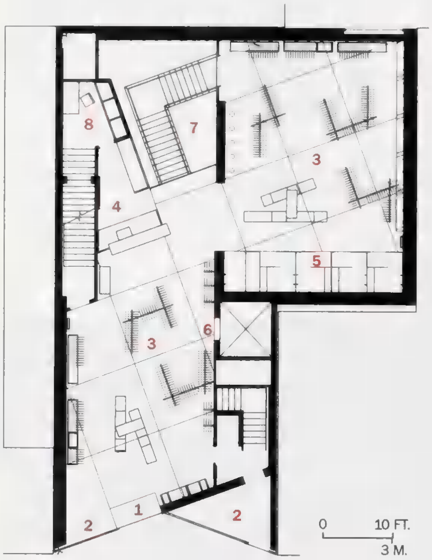
SECTION THROUGH A-A

On West Broadway, in SoHo, the Max Mara store stops traffic with its strong wood-and-glass slatted window wall (opposite). Three laminated wood trusses span the main retail space (above) at the rear of the shop.

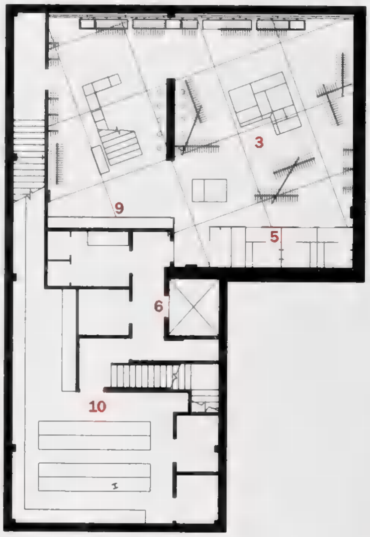








GROUND FLOOR



LOWER FLOOR

1. *Entrance*
2. *Window display*
3. *Retail space*
4. *Sales desk*
5. *Dressing rooms*
6. *Elevator*
7. *Double-height space*
8. *Office*
9. *Accessories display wall*
10. *Stock room*

At the bottom of the stair to the lower level, a walnut wall (above right) is designed with shelflike units that pull out for displaying merchandise. Dressing rooms (above left) hide behind rusted steel panels.

The walls on both levels are precast-concrete panels (opposite, bottom, and below) that have a quilted effect and seem to be sewn together with stainless-steel-cable stitches. A cantilevered, poured-in-place-concrete stair (right) sculpturally unites the two levels.

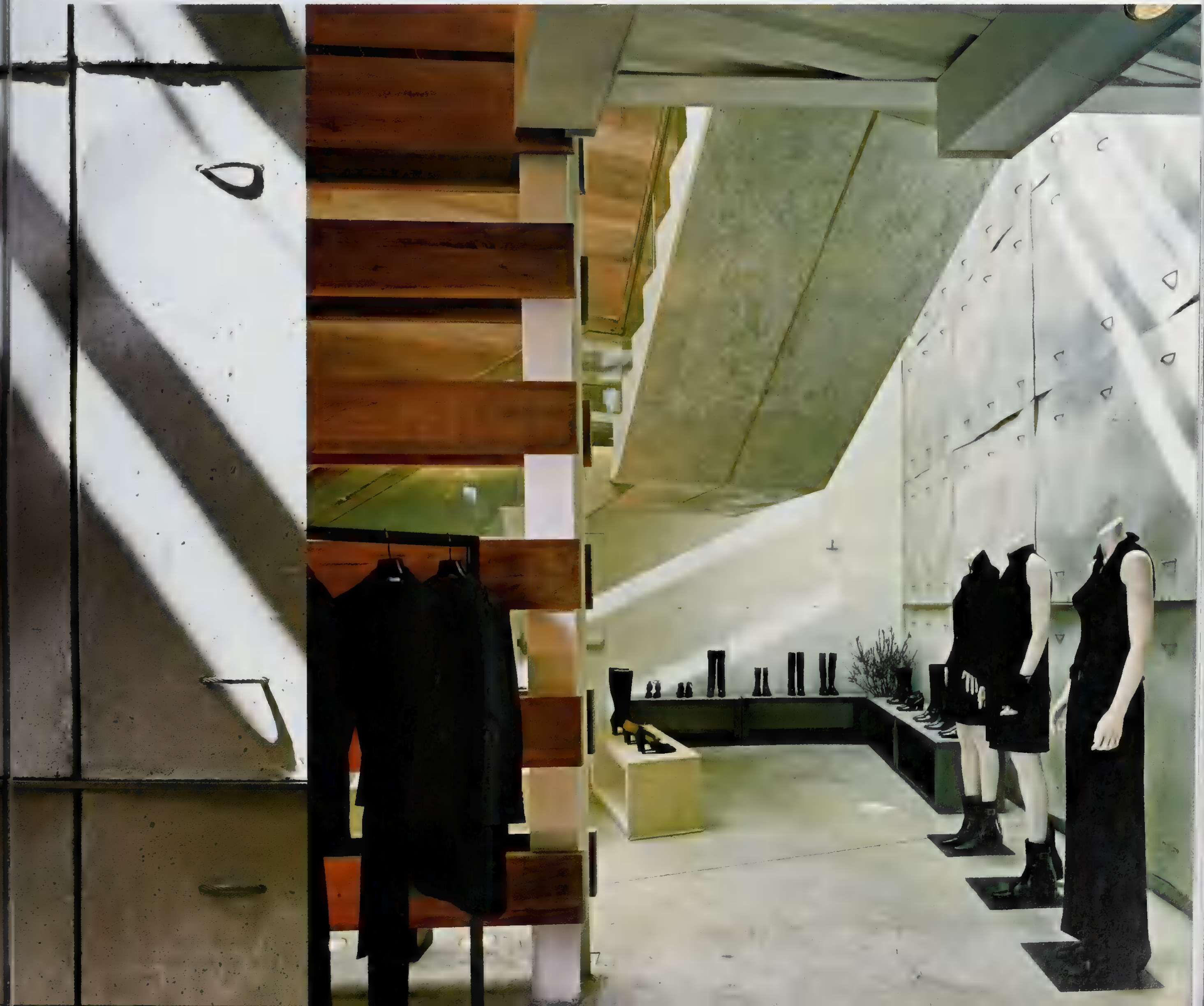
the panels can be used for hanging clothes, while other items are arranged in movable steel racks, some of which have leather and mirror panels. The modular design of these cagelike units incorporates both shelving or hanging bars used as display devices. More surfaces for showing shoes, bags, and scarves are provided by clustered islands of rectangular volumes formed of white solid surfacing, sheet metal, or leather cushions. Along one wall, rusted steel panels conceal dressing rooms, which are lined in white solid surfacing and mirrors.

As visitors descend the cantilevered poured-in-place-concrete stair, rotated on a 20-degree angle aligned with the trusses and the entry plane, they arrive first at a wood display wall, in which polygonal shelves, equipped with lights on their undersides, pop out like drawers. The main retail space of this lower level retains the quilted concrete wall of the upstairs space; in this instance, the ceiling is exposed metal decking, painted white.

The artificial lighting throughout is programmed to supplement illumination from the two skylights; the skylights themselves seem weightless, for the glass is supported by stainless-steel fingers, rather than the heavier mullions usually seen elsewhere. Since the steel column-and-beam structure of the store is painted white, it too seems to disappear.

Commentary

Many of the architectural motifs, such as the use of the diagonal, the oversize wood and glass partitions, and the large trusses with lights mounted in them, would likely dominate or fight with clothes by another designer. Here, however, fashion and architecture propitiously reinforce each other. The skylighted atrium, the slanted ceiling planes, the concrete wall, and the cantilevered stair all create a volumetric statement that keeps the shopper moving while still being able to actually see the clothes. ■



Hermès

Tokyo, Japan

3

FASHION HOUSE HERMÈS' FLAGSHIP STORE BY RENZO PIANO BUILDING WORKSHOP GIVES TOKYO'S GINZA DISTRICT SOME MUCH NEEDED ELEGANCE.

By Raul A. Barreneche

Architect: *Renzo Piano Building Workshop—Renzo Piano, partner in charge; Paul Vincent, associate in charge; Loïc Couton (project manager); Giorgio Ducci, Pascal Hendier, Frank La Rivière, Christophe Kuntz, design team*
Executive architect: *Takenaka Design Department*
Client: *Hermès Japon*
Consultants: *Arup (structural, mechanical, seismic); Syllabus (cost control); Delphi (acoustics); Equipe Espace (landscaping); Philippe Almon Eclairagistes (lighting); Rena Dumas (interior design)*
General contractor: *Takenaka Corporation*

Size: *6,000 square meters*
Completion date: *2001*

Sources
Facade fabrication: *Schmidlin AG*
Glass block: *Vetroarredo*
Furniture: *SOGO (shops); Technics d'Agencement (office)*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com.**

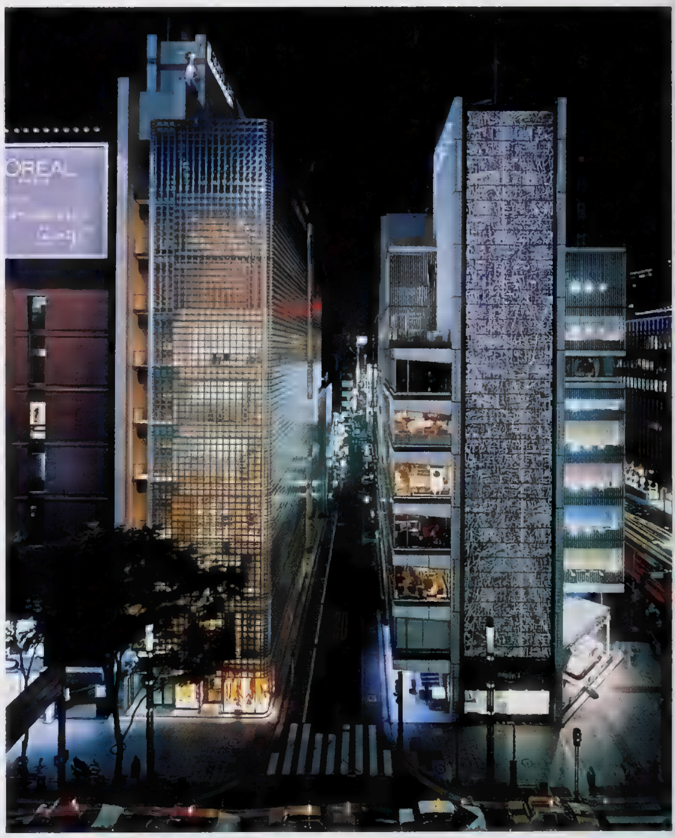
Recession or not, the streets of Tokyo are usually full of fashionable shoppers weighed down by shopping bags sporting the most luxurious names in European fashion. Hermès, the French fashion house known for patterned silk scarves and shiny H-shaped belt buckles, recently opened a flagship in Tokyo. The company hired the Paris office of Renzo Piano Building Workshop to create an elegant building to stake out its identity among the garish neon- and billboard-covered sliver buildings of Tokyo's Ginza district.

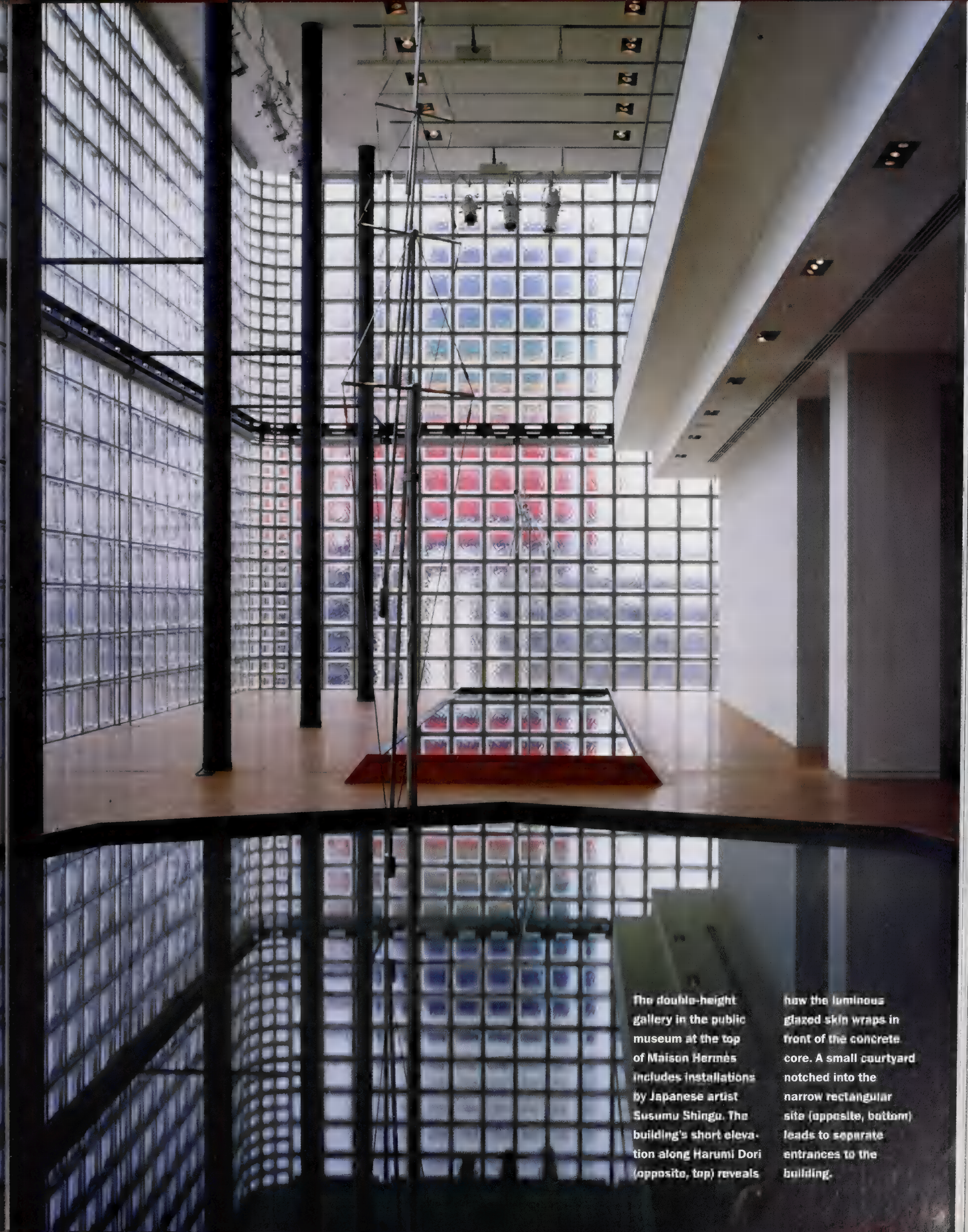
Program

Maison Hermès, as the new store is called, consolidates the label's corporate and retail operations into a single signature building at the corner of Harumi Dori and Sony Dori in the heart of Ginza. The slender site measures just 12 meters wide by 45 meters long. Inside the 6,000-square-meter building are five levels of shopping (one below grade, four above); one floor devoted to a design atelier; two floors of offices; a mini museum on the top two levels; and a rooftop garden. The building also contains a link to the Tokyo subway.

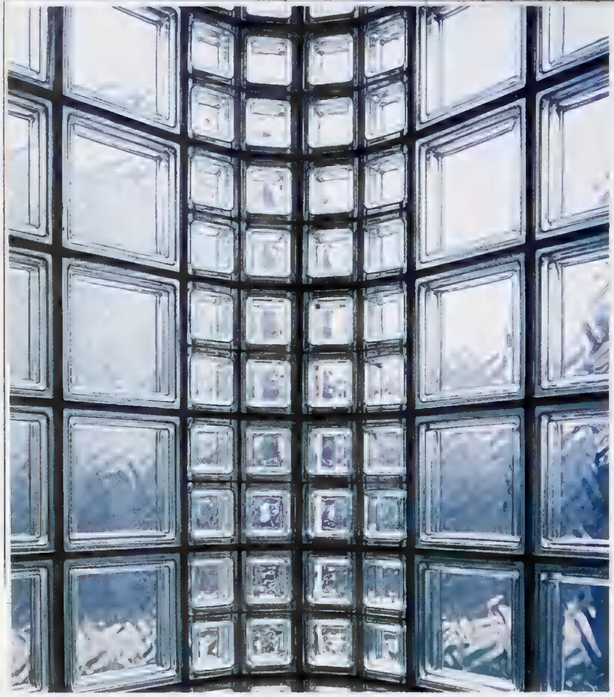
Solution

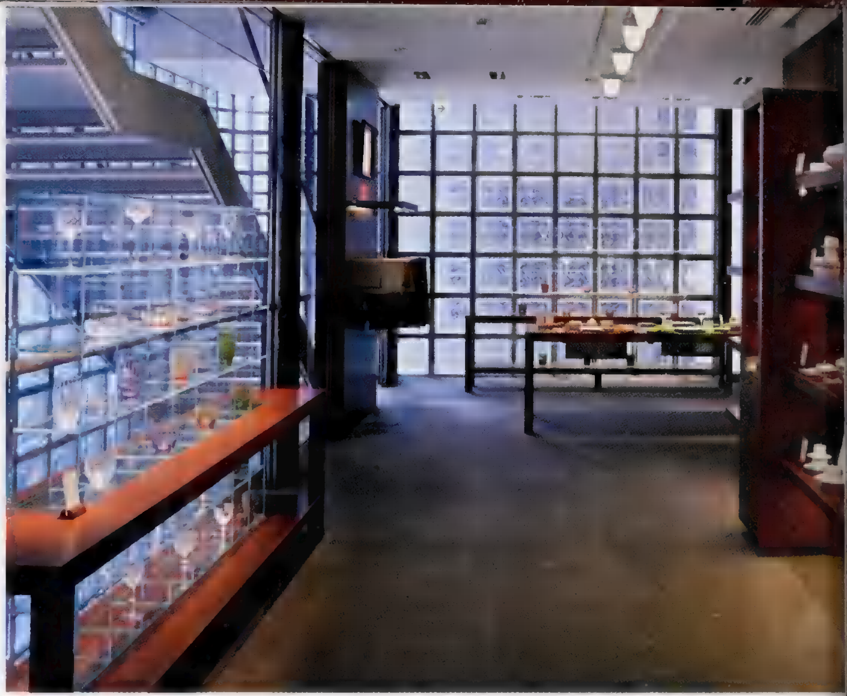
At 12 stories, the Maison Hermès is far from a skyscraper, but it maintains a noticeable presence in Tokyo's crowded urban fabric. Piano cleft the long, narrow rectangular site with a small courtyard leading to





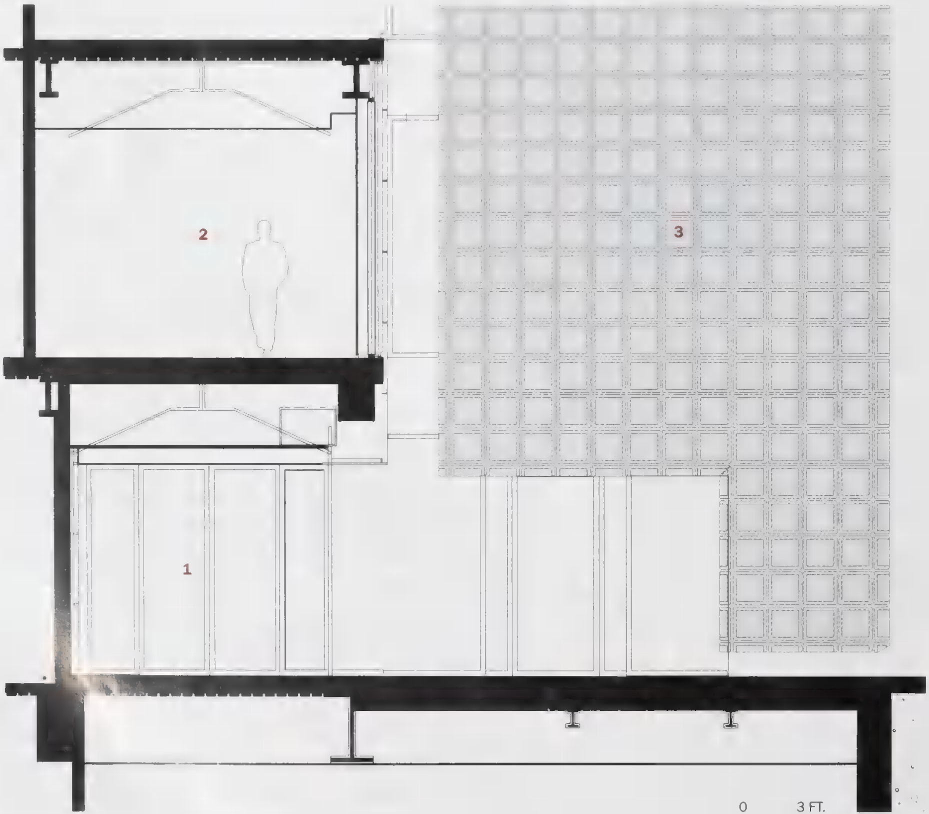
The double-height gallery in the public museum at the top of Maison Hermès includes installations by Japanese artist Susumu Shingu. The building's short elevation along Harumi Dori (opposite, top) reveals how the luminous glazed skin wraps in front of the concrete core. A small courtyard notched into the narrow rectangular site (opposite, bottom) leads to separate entrances to the building.





To create rounded profiles at the building's corners, Piano designed small, one-quarter variations on the square glass blocks (above left). The exterior surfaces of the small blocks are rounded; interior surfaces are flat. Display areas on the narrow retail floors (above right and opposite) are sandwiched between public staircases along the glass-block exterior wall and the internal core.

1. *Main entrance*
2. *Small shop*
3. *Glass-block curtain wall*

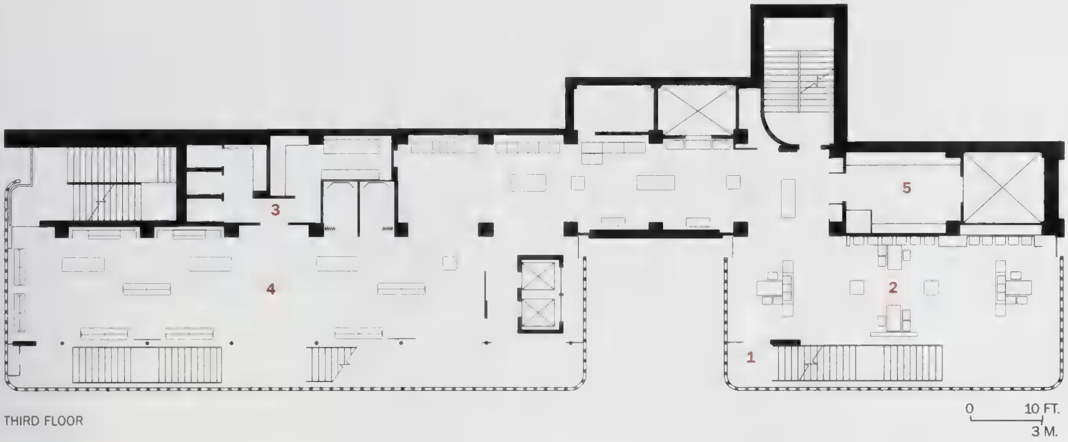


CROSS SECTION NEAR ENTRANCE

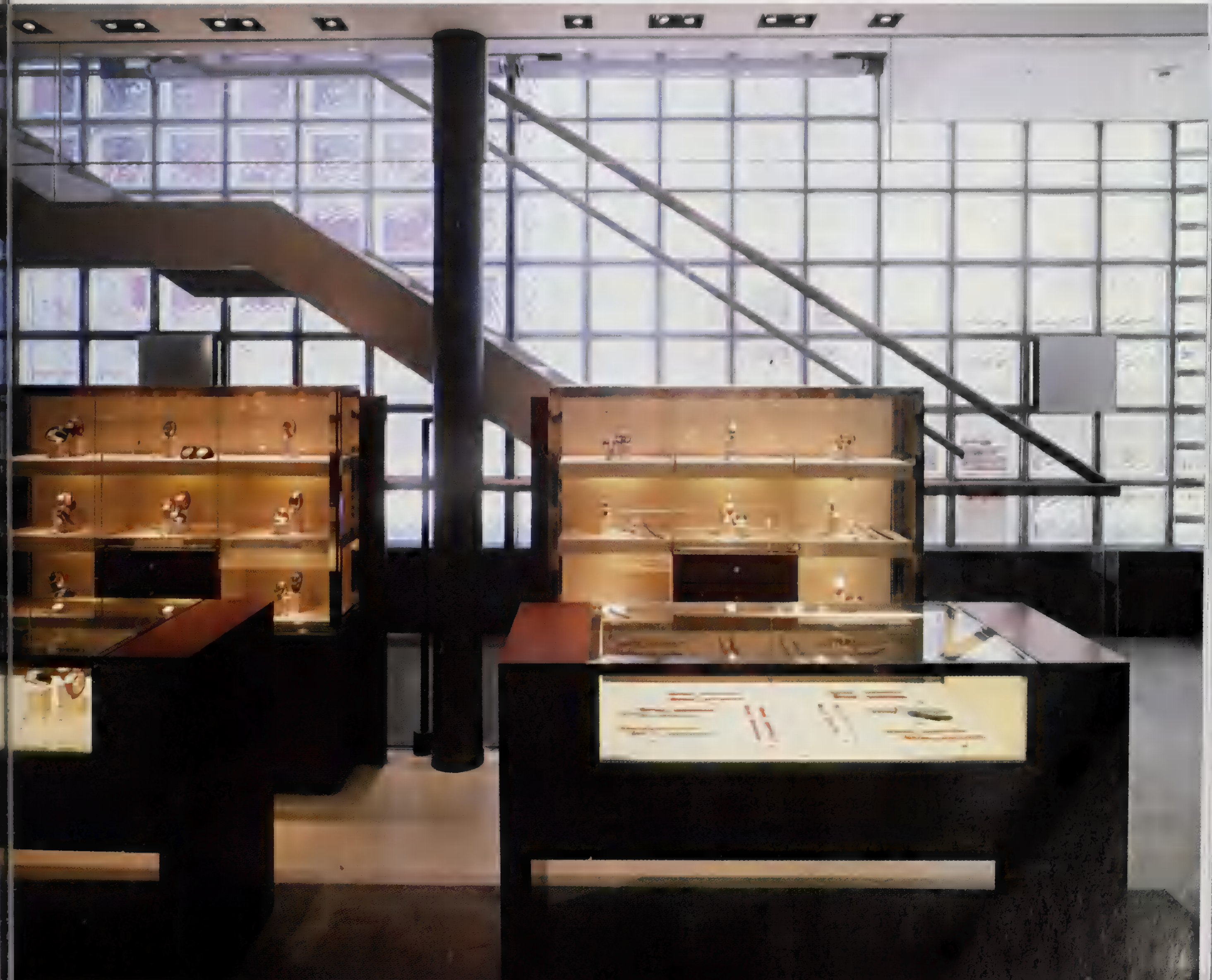
separate ground-floor entrances to the shop, the Hermès offices, the museum, and the subway station below. The courtyard void rises up the full 50-meter height of the building, creating a vertical shaft separating the structure into two distinctly proportioned volumes clad in glass block.

On the first three retail levels, Piano placed staircases up against the glass-block exterior. From the inside, daylight becomes an orientation device; from the outside, shoppers' movement up and down the staircases animates the facades with activity and differentiates between the shopping floors and the working floors above. Except for a double-height space in the top-floor museum, there is no vertical interplay among the tight, dimpled floor plates.

In typical Renzo Piano fashion, the driving force behind the building is an elegant exploration of structure and material, however subtle. The narrow floor plates are cantilevered from a concrete spine extending the full length of the building. The concrete structure defines a 3-meter-wide slot into which Piano placed most of the building's core functions, including stairs and elevators, bathrooms, and storage. The remaining 9-meter-wide cantilever



1. *Public stair*
2. *Small shop*
3. *Service areas*
4. *Large retail*
5. *Utilities*



allows for nearly column-free floors all the way to the exterior wall. The structural core-and-cantilever concept is clearly visible in the building's Harumi Dori elevation.

The sleek cladding is composed of more than 13,000 custom glass blocks measuring 45 centimeters square, which were developed by Piano and the Vetroarredo glass factory in Florence. The exterior surfaces of the blocks were mirror-varnished by hand; the interior surfaces are textured. Despite its delicate appearance, the facade meets Japan's stringent seismic codes. The blocks are mounted in a steel grid that allows them to move up to 4 millimeters during earthquakes.

Commentary

Maison Hermès remains a relatively small, straightforward building bordering on the unremarkable. In the absence of any grand spaces or robust gestures, the glass-block wrapper is the building. It is a skin and sign that defines the both/and qualities of the building: both heavy and lightweight, transparent and solid, old-world and high-tech, background and billboard. These apparently conflicting characteristics are indeed what give the building a richness of character that transports it beyond the realm of the ordinary.

Piano executes the cladding with rigor, but it's not as structurally daring—or visually surprising—as in his previous buildings. Rather than Piano's signature forward-looking technological invention, the cladding looks like a riff on history; specifically, Pierre Chareau's 1932 Maison de Verre. There are a few moments of skillful sleight of hand, such as several spots where the glass-block wall seemingly floats above sidewalk-level display windows. On the Harumi Dori elevation, the glazed skin overlaps the edge of the concrete core like a delicate veil rather than an ordinary load-bearing, glass-block wall.

For Hermès, the success of Piano's building will be measured in register receipts. The constant crowds filling the building so far point to a resounding commercial, if not architectural, triumph. ■

Retail interiors by Parisian designer Rena Dumas (above and below) continue the look of Hermès stores worldwide. Dumas's warm, understated interiors, filled with boxy vitrines and furniture, create a more classical foil to Piano's cool, sleek exterior.

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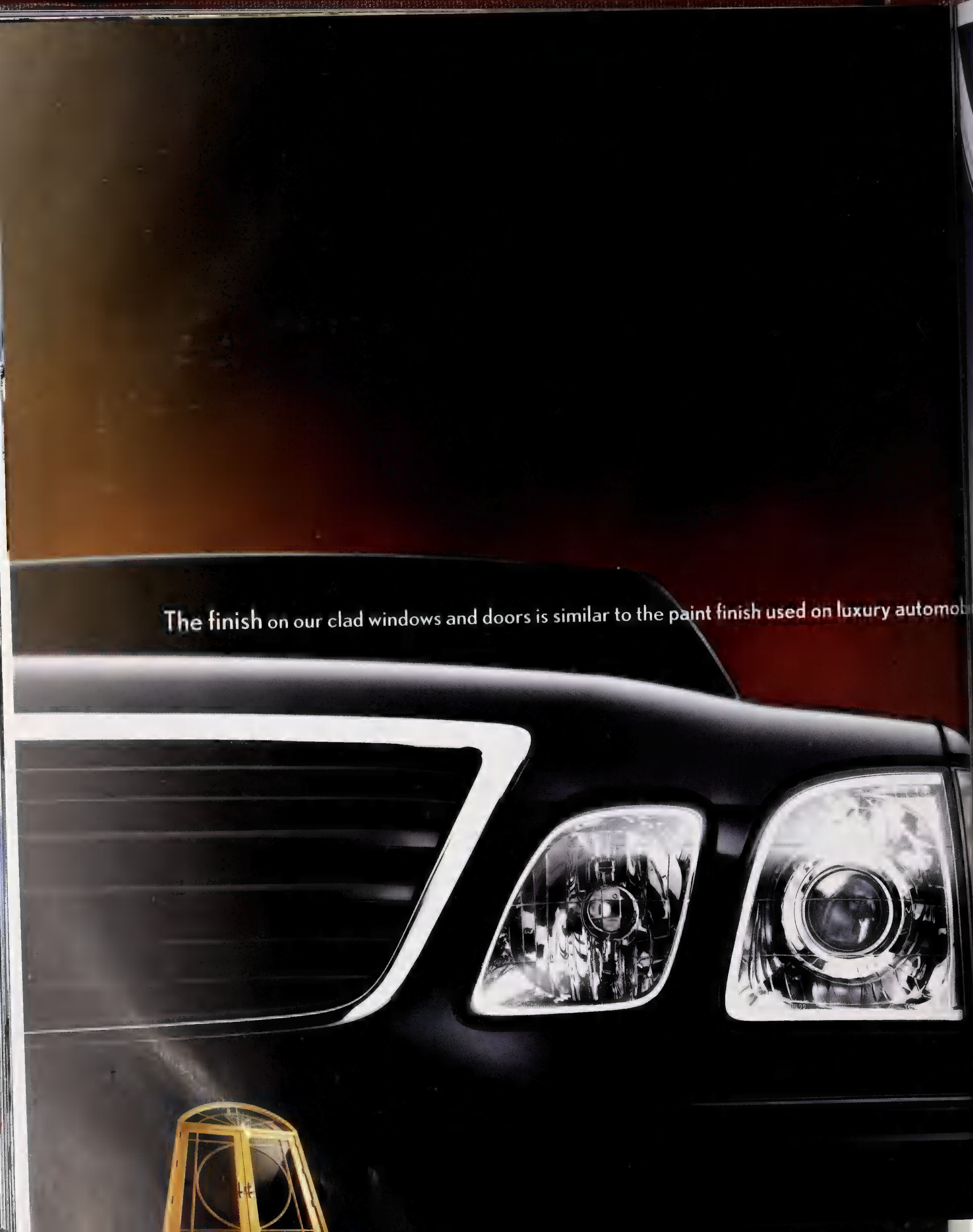

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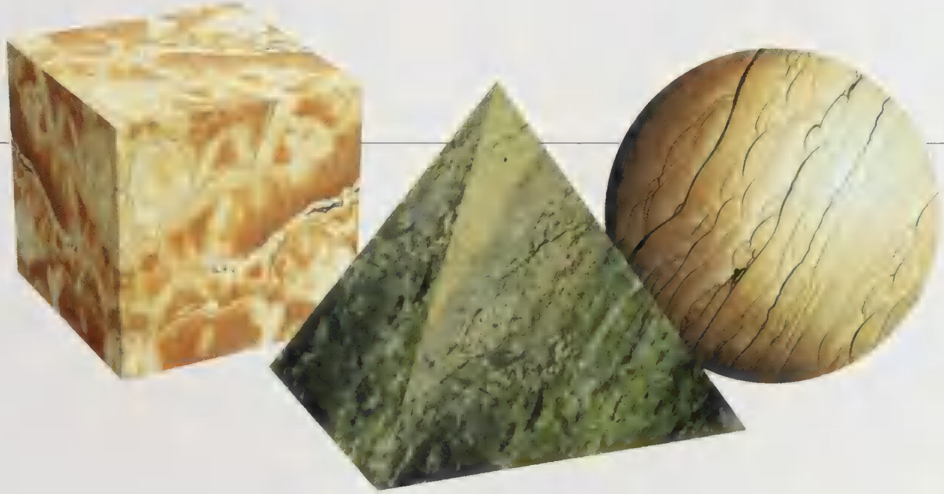

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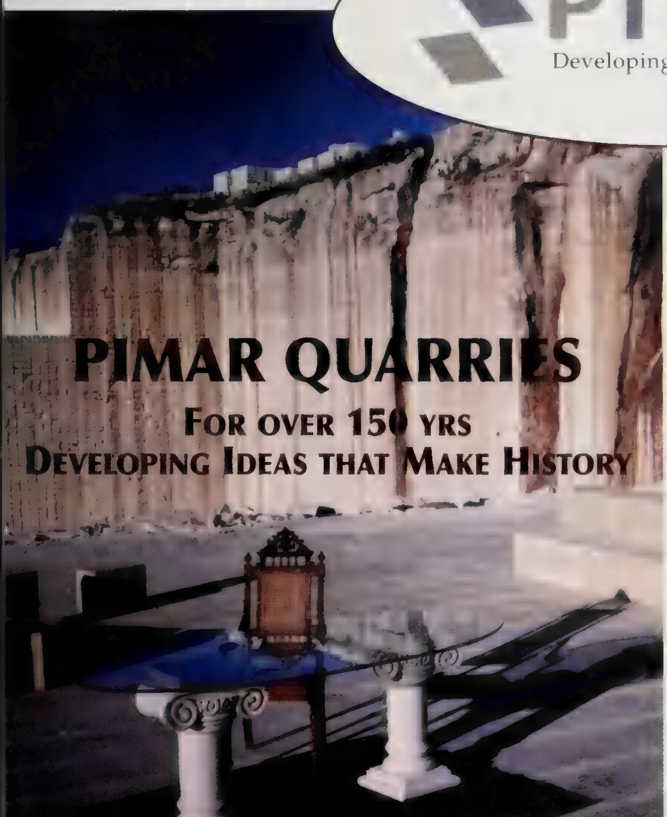

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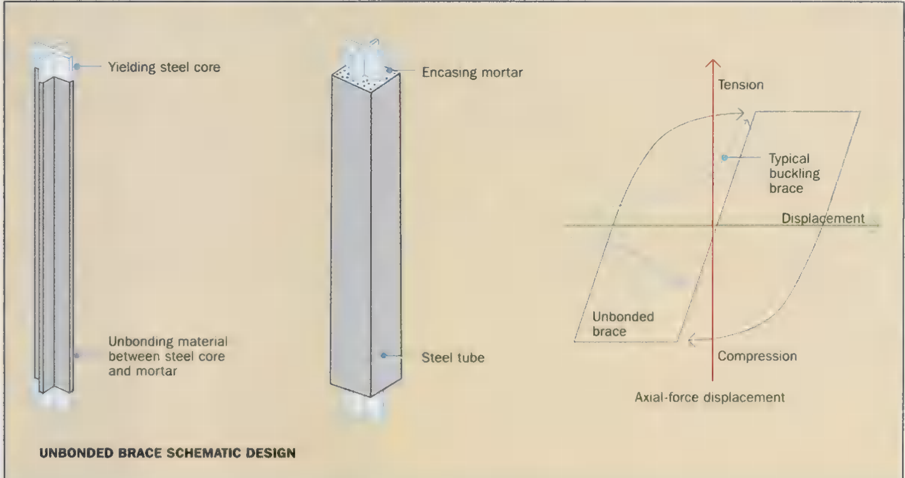
Both New and Improved Advances in Seismic Technologies Promise Safer Buildings

SINCE MOST REGIONS OF THE U.S. ARE VULNERABLE TO EARTHQUAKES, ARCHITECTS MUST RESPOND

By Michael Bordenaro

In April, New York City was rippled slightly with an earthquake that registered a mere 2.3 on the Richter scale. It was not enough of a shake to cause any damage, but it was a sound reminder that architects in many areas other than California need to give careful consideration to seismic issues.

While new seismic-reinforcing technologies continue to evolve, architects are increasingly developing innovative applications of existing design practices to cost-effectively safeguard structures. Recently introduced systems, such as unbonded braces and the promise of posttension-steel-frame research contribute to new seismic-design options. However, architects are also finding increased uses for base-isolation systems while continuing to use existing reinforcing methods in new ways. The combination of new technology and new applications of traditional methods is helping to bring existing building stock up to current seismic standards and create new structures with an increased capacity to resist seismic forces.



Unbonded braces are designed to prevent buckling of a central steel core caused by lateral forces. Unbonded means that a slip surface or unbonding layer allows the steel core to move independently from the mortar and take all the axial loads.

Unbonded braces

Braced steel frames are often used to protect buildings from damaging lateral displacements caused by severe earthquakes. Recent research and development have led to the creation of more durable bracing systems that can restrain lateral and local buckling. Unbonded braces—also known as buckling-restrained braces—combine structural-steel-tube, girder, and cement technologies to create a member that does not buckle under compression forces. In this method, a girder—or coreplate—is given a proprietary coating to prevent it from sticking to the cement and is then inserted in the tube (see diagram above). The tube is then filled with a specially formulated cement grout that resists adhesion to the coreplate. The coreplate, typically cruciform, extends past the ends of the steel tube so it can be bolted to other structural members.

During an earthquake, if the unbonded brace is compressed, the steel tube and cement prevent the coreplate from buckling. If the member is put in tension, the nonstick coating allows the coreplate to elongate just as any brace would. "Because the unbonded brace doesn't buckle, it provides a more predictable and reliable earthquake-resistant behavior, which is a compelling attraction for designers," explains Ian Aiken, an engineer and principal with Seismic Isolation Engineers (SIE), in Oakland, California, and a U.S. design consultant for Japanese unbonded-brace manufacturer Nippon Steel.

The unbonded-brace system was developed in Japan, where it has been applied to more than 200 buildings in the past 10 years. Since being introduced in the United States in 2000, the technology has appeared in about 15 building projects. Zigmund Rubel, AIA, project director with Anshen+Allen, in San Francisco, says the use of unbonded braces at the Kaiser Medical Center, in Santa Clara, California, saved construction costs. "In a typical hospital there would be a moment frame with 25 pounds of steel per square foot or eccentric braces with 20 pounds per square foot," Rubel says. "The unbonded braces required 15 psi, which represented considerable cost savings in raw steel alone."

Michael Bordenaro is a Chicago-based business writer who focuses on architectural technology.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn to page 192 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe recently introduced systems of reinforcing technology*
2. *Discuss innovative applications of existing safeguards to structures*
3. *Identify benefits and limitations of several seismic-design options*

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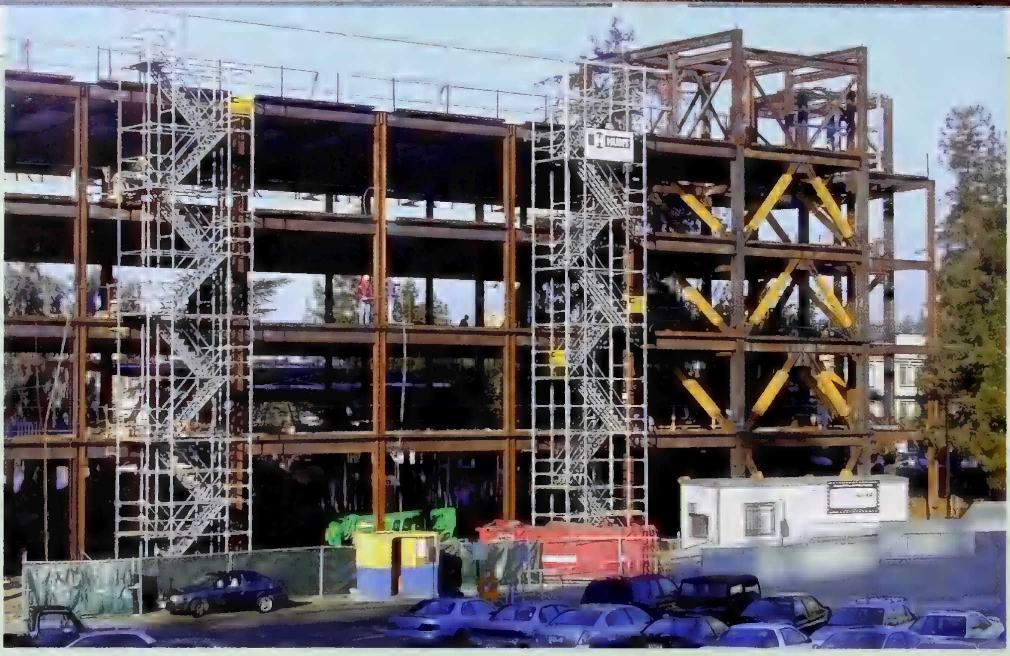

Dining Hall
University of California, Berkeley

Two kinds of unbonded braces were employed in this structure. The four-story office portion of the building has 16-foot unbonded braces in a chevron configuration (above). In the 40-foot-tall dining hall (right), exposed unbonded braces as long as 37 feet were used. A typical brace would have been too large and ungainly to serve as a design element.

Eric Ko, principal with the project's structural engineer, Arup in San Francisco, noted that time savings are also realized, because unbonded braces can be bolted instead of welded. "Being able to bolt the connections cut 10 weeks off the steel-erection schedule and minimized the need for critical on-site welding," Ko says. Ko also noted that the unbonded braces can be made with circular tube steel that can present an attractive appearance if exposed.

Ko noted that the 1995 Kobe, Japan, earthquake, which registered 7.3 on the Richter scale, occurred during the design of this project. After investigating the success rate of unbonded braces there, Ko changed the structural design of the hospital to accommodate increased building demands. "After Kobe, the seismic demand for the hospital was increased by 50 percent. The square footage of the building also increased by 50 percent, yet we were able to use the same number of unbonded braces as there were eccentric braces in our original design," Ko says.

BEING ABLE TO BOLT THE CONNECTIONS CUT 10 WEEKS OFF THE STEEL-ERECTION SCHEDULE AND MINIMIZED WELDING.

When designing with unbonded-brace frames, Ko recommended architects consider placing the brace around the exterior of the building. He noted that while this is challenging for placement of windows and other openings, it frees interior spaces to serve building functions. "Once interior plans are established, additional bracing can be placed at staircases, corridors, and other locations," Ko says.

The Stanley Hall replacement building, a new center for interdisciplinary teaching and research in the biomedical and health sciences at the University of California's Berkeley campus and designed by Portland-based Zimmer Gunsul Frasca Architects, will also be supported by an unbonded-brace frame. Until the campus Seismic Review Committee recommended that physical tests be performed as part of the design process, little testing had been done using U.S. design and construction practices. San Francisco–based engineers Rutherford & Chekene designed the full-scale test specimens for braces manufactured by Nippon Steel of Japan. The field tests proved that the frames had almost identical properties in tension and compression and could sustain numerous cycles of inelastic deformations without failing or deforming. Three tests were conducted in the Structural Engineering Research Laboratory on the campus. Lateral loads exceeding 1.2 million pounds were applied to a representative one-bay-wide, two-story high segment.

For a four-story, steel-frame administration building and glass-walled dining hall also at Berkeley, two types of unbonded braces were used. Los Angeles architect Cannon Design and the Los Angeles office of Arup used 16-foot unbonded braces in a chevron configuration for the four-story office portion of the building. In the 40-foot-tall dining

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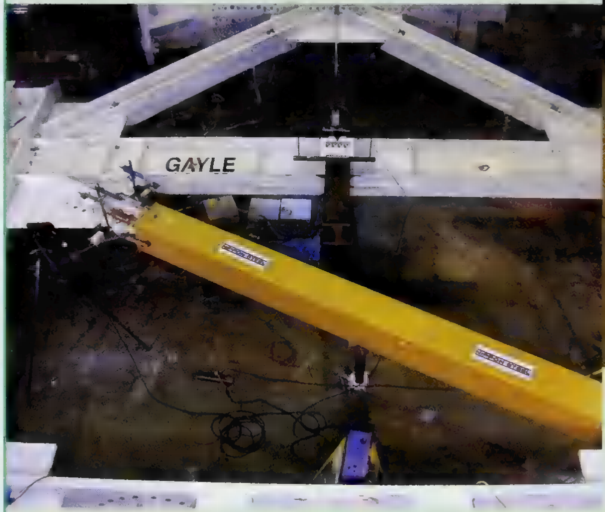
Stanley Hall University of California, Berkeley
San Francisco–based engineers Rutherford & Chekene coordinated a series of tests of full-size unbonded braces (below and right) manufactured by Nippon Steel of Japan. Undertaken at the Structural Engineering Research Laboratory on campus, the braces performed well under 1.1 million pounds of lateral pressure.

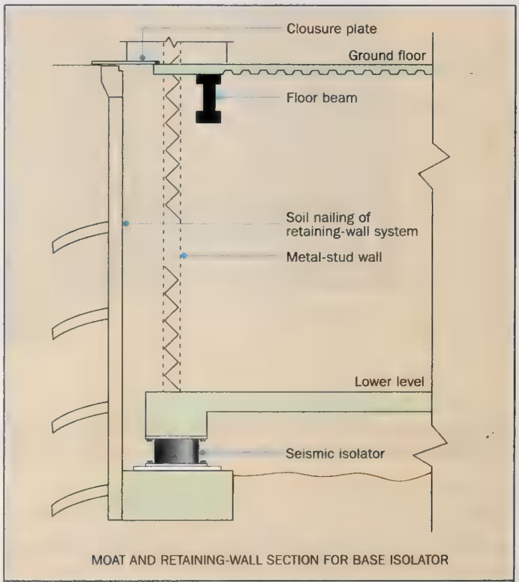


hall, exposed unbonded braces as long as 37 feet were used. A typical brace would have been too large and ungainly to be used as a design element in the tall, glass-walled dining hall, according to SIE's Aiken.

Posttensioned steel frames

The Northridge, California, earthquake in 1994 created numerous failures in the welded joints of steel-frame buildings. Many fractures extended through columns. In an attempt to stabilize the steel frames, some buildings were fitted with posttensioning rods similar to those used in posttensioned concrete, where steel rods threaded through the concrete are tightened to compress the structure and increase its strength. Expanding that concept to new buildings, research at the University of California, San Diego's (UCSD) Jacobs School of Engineering is exploring the feasibility of posttensioned-steel-frame buildings. André Filiatrault, professor of structural engineering at UCSD, indicates that under the proper conditions, posttensioned-steel-frame buildings can be built without welded joints. Filiatrault and doctoral candidate Constantin Christopoulos tested the system on the university's large-scale shaker table. Their tests demonstrated that posttensioned steel frames without any welded joints demonstrate high resistance to earthquake forces.

Arup's Ko notes that posttensioning has been a suitable retrofit solution for moment-frame structures with proper conditions for safely placing tension rods through a building at the necessary points. But in many scenarios, an application may be challenging because of construction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City Hall Los Angeles
Base isolators (right) combined with added shear walls and seismic dampers helped secure the building so that the renovation program did not require that the terra-cotta details (above) be entirely reanchored. The combination of structural systems reduced the loads on the existing structure.

issues. For example, Ko noted that the rods can be an obstacle to the placement of mechanical systems. "At this point, this technology would have to be applied in very specific cases because it is in the research stage," says Ko.

Base isolation

While base isolation is no longer a new technology, increased familiarity and reduced costs are making this highly effective seismic solution applicable to a greater range of buildings. Both small and tall buildings are being equipped with base isolators, which are dynamic connections at the base of columns that are free to move independently from the ground during an earthquake [ARCHITECTURAL RECORD, February 2000, page 130].

BASE ISOLATORS ARE BEING COMBINED WITH OTHER SEISMIC SYSTEMS TO REDUCE LOADS ON CURTAIN WALLS.

Base isolators are known as being effective for short buildings with large footprints. The weight of such buildings and the reduced likelihood of damaging, amplifying motion—or whipping—in the upper floors makes them ideal candidates for base isolation. However, because base-isolated buildings have a high probability of remaining functional after an earthquake, base isolators are also being used in smaller-size civic emergency facilities, such as the 53,000-square-foot Los Angeles Police Department Emergency Command Control Center, designed by Los Angeles–based DMJMH+N.

Base isolators are being combined with other seismic structural systems to reduce loads on curtain walls. In the Los Angeles City Hall renovation, led by A.C. Martin Partners, Los Angeles, base isolators combined with an increased number of shear walls and seismic dampers helped secure the tower from swaying to an extent that its 30-story terra-cotta facade did not need to be entirely reanchored.

Although base isolation still adds approximately 10 to 15 percent to the cost of a building, architects find that this premium can reduce costs in other building systems. Bruce Toman, technical director with DMJMH+N, says, "We have had cases where the engineer developed an economical structure, but the side sway was such that there was a premium on the curtain wall because it couldn't accommodate the movement in the corners." In some cases, Toman says, using base isolators was actually less expensive than creating a curtain-wall system that could handle the sway of a nonisolated structure.

Because base isolation is being considered for a greater range of buildings, architects can benefit from being aware of some major issues

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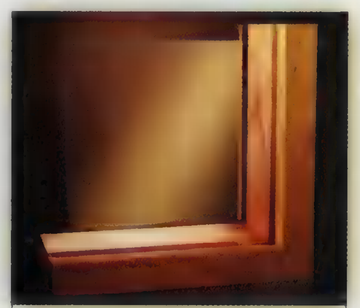

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Edward L. Doheny, Jr., Memorial Library University of Southern California, Los Angeles
Shear walls were introduced to reinforce this 1932 building (top). Panels were cut through both interior and exterior walls and up to 2 feet of shotcrete-covered shear walls were inserted throughout. Some walls (right, far right) were disassembled and reassembled to accommodate the thick shotcrete application.

when considering this structural solution. Toman notes that a key element in designing base-isolated structures is remembering all aspects of the building. "Just because you base isolate doesn't mean motion goes away. The isolators are just limiting ground motion to a point where it won't cause major destruction," he says. He adds that items such as curtain walls and interior fixtures need to be thoroughly evaluated, even though base isolation will help eliminate building failure. Base isolation requires 20 to 30 inches of free space—a moat—around the building, in which the structure can move horizontally during an earthquake. Spanning this moat with properly detailed pedestrian bridges, vehicle access, and utilities can be a challenge.

BASE ISOLATION REQUIRES A MOAT AROUND THE BUILDING IN WHICH THE STRUCTURE CAN MOVE HORIZONTALLY.

Toman notes that while there are flexible piping systems that can handle this level of movement, it is also possible to design sewer and water lines with solid pipes formed into a U shape. With flexible connections at the tops of the U and in the middle, it is possible to create a highly flexible pipe connection, according to Toman. "You don't necessarily have to specify special flexible rubber pipes, you just have to allow movement in the coupling," he says.

Pedestrian bridges over the moat need to be configured in a way that does not prevent doors from opening after an earthquake, according to Toman. Telescoping floor plates and specialized seismic expansion joints are among some of the options available from manufacturers such as C/S Group and Dynamic Isolation Systems. Toman also notes that it's important to provide headroom space around the base isolators so they can be easily inspected. Stairs that lead to the level containing the isolators are frequently suspended from the building and not attached to the floor, to allow movement.

Shear-wall solutions

Because of its scale, lessons learned from the $180 million seismic restoration of the Los Angeles City Hall may not apply to all base-isolator projects. But there were some concepts that are applicable to other projects. For example, the installation of 526 base isolators and 64 viscous dampers did not ensure that the building's terra-cotta facade and historic interior mosaics and details would not be rattled off during an earthquake. In order to further stiffen the building, shear walls were added.

Carey McLeod, project director for A.C. Martin & Partners,

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reports that gunite and cast-in-place concrete were added to the back of hollow clay tiles that are behind much of the city hall's historic fabric. According to McLeod, if there were only one reinforcing system, there would be enough seismic force to shake the terra-cotta tiles loose. "We would have had to reanchor the entire skin of the building," McLeod said.

Similarly, at the University of Southern California's Edward L. Doheny, Jr., Memorial Library, in Los Angeles, Fields Devereaux Architects & Engineers carefully applied shotcrete to reinforce the 1932 building. Firm principal Peter Devereaux, AIA, says that access panels were cut through both interior and exterior walls so that up to 2 feet of shotcrete could be applied to create shear walls throughout the 167,000-square-foot structure.

THERE ARE 45 STATES AND TERRITORIES IN THE UNITED STATES AT MODERATE TO VERY HIGH RISK FROM EARTHQUAKES.

Depending on the historic nature of the wall section, either the interior or the exterior had an access panel cut into it so that reinforcing bars and shotcrete could be installed. According to Devereaux, in some cases the interior walls were disassembled and then rebuilt a short distance into the room to accommodate the required shear-wall thickness.

Tom Sabol, AIA, a principal and structural engineer with the project engineer Englekirk & Sabol, indicated that a special code variance was required to reinforce the building in this manner. Sabol's design called for the shear-wall reinforcing bars to be larger and closer together than in typical shotcrete applications. Standard shotcrete application methods may result in air pockets if the reinforcing bars are too close together.

However, Sabol worked with local code officials and contractors to develop test panels using a more controlled application method. Coring and sample strength tests demonstrated that complete coverage and more than adequate strength was obtained. "Much structural engineering is driven by application of building code," Sabol says. "It is important to be familiar with the reasons why provisions are written so you know when it is appropriate to modify them and apply something new."

Back in New York City, where few felt the shake last April, fewer still know that the metropolitan area has a hazard rating of moderate from the U.S. Geological Survey. This means that a moderate earthquake could put buildings, infrastructure, and people at considerable risk. New York is not alone. There are 45 states and territories in the United States at moderate to very high risk from earthquakes, and they are located in every region of the country, according to the Federal Emergency Management Agency. With estimates of losses from a future earthquake in the United States approaching $200 billion, few architectural firms will escape the need for seismic expertise. ■

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INSTRUCTIONS

- **Read the article "Both New and Improved Advances in Seismic Technologies Promise Safer Buildings" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 272).**
- **Fill out and submit the AIA/CES education reporting form (page 272) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. What happens when an unbonded brace—also known as buckling-restrained braces—is compressed?
a. the cement is pushed out of the steel tube
b. the steel tube and cement prevent the coreplate from buckling
c. the coreplate prevents the steel tube from buckling
d. the steel tube causes the coreplate to buckle

2. What happens when an unbonded brace is put in tension?
a. the coreplate elongates
b. the steel tube prevents the coreplate from elongating
c. the coreplate prevents the steel tube from elongating
d. the coreplate breaks

3. The benefits of using unbonded braces include which?
a. cost savings in raw steel
b. time saving on the steel-erection schedule
c. attractive appearance if exposed
d. all of the above

4. Where did Eric Ko, Arup structural engineer, recommend placing unbonded braces on the Kaiser Medical Center project?
a. away from the exterior
b. around the exterior
c. only on interior staircases and corridors
d. evenly spaced throughout

5. Tests of posttensioned steel frames without any welded joints demonstrated which?
a. some joints should be welded
b. damage to mechanical systems
c. high resistance to earthquake forces
d. high failure rate

6. Base isolators are normally used for what type of building?
a. tall with large area
b. tall with small area
c. short with small area
d. short with large area

7. Issues to consider when designing for base-isolation systems include all except which one?
a. roofing materials
b. interior fixtures
c. moat around the building
d. flexible piping connections

8. The benefits of base isolation in upgrades as well as new construction include which of the following?
a. cost savings in construction materials
b. elimination of horizontal sway during an earthquake
c. high probability of remaining functional after an earthquake
d. attractive appearance if exposed

9. Which standard construction methods and materials are used to reinforce shear walls?
a. cast-in-place concrete
b. shotcrete
c. reinforcing bars
d. all of the above

10. Why is it important to be familiar with the reasoning behind current building codes?
a. to know when to question their validity
b. to know that strict interpretation is necessary
c. to know when to apply for a variance
d. to know when one can ignore them

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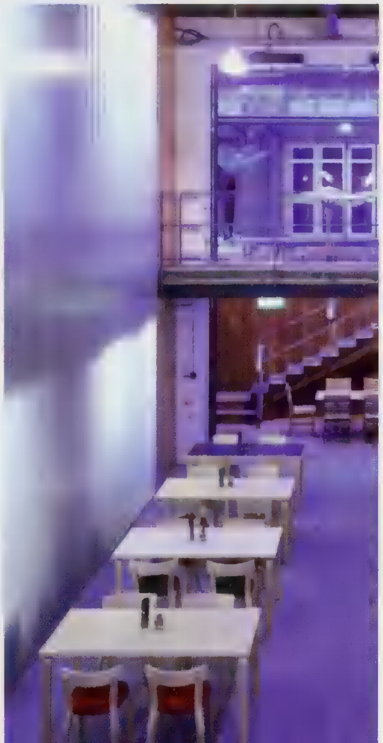

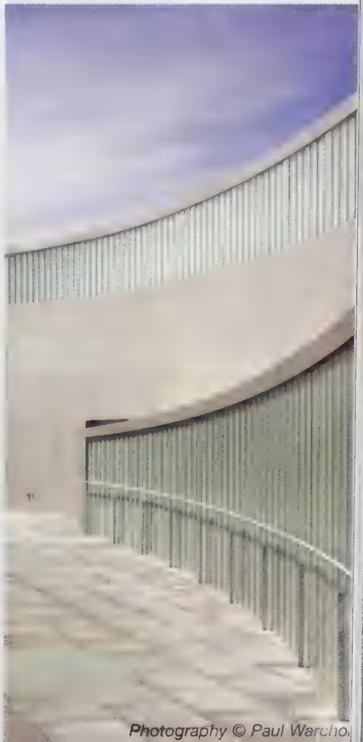

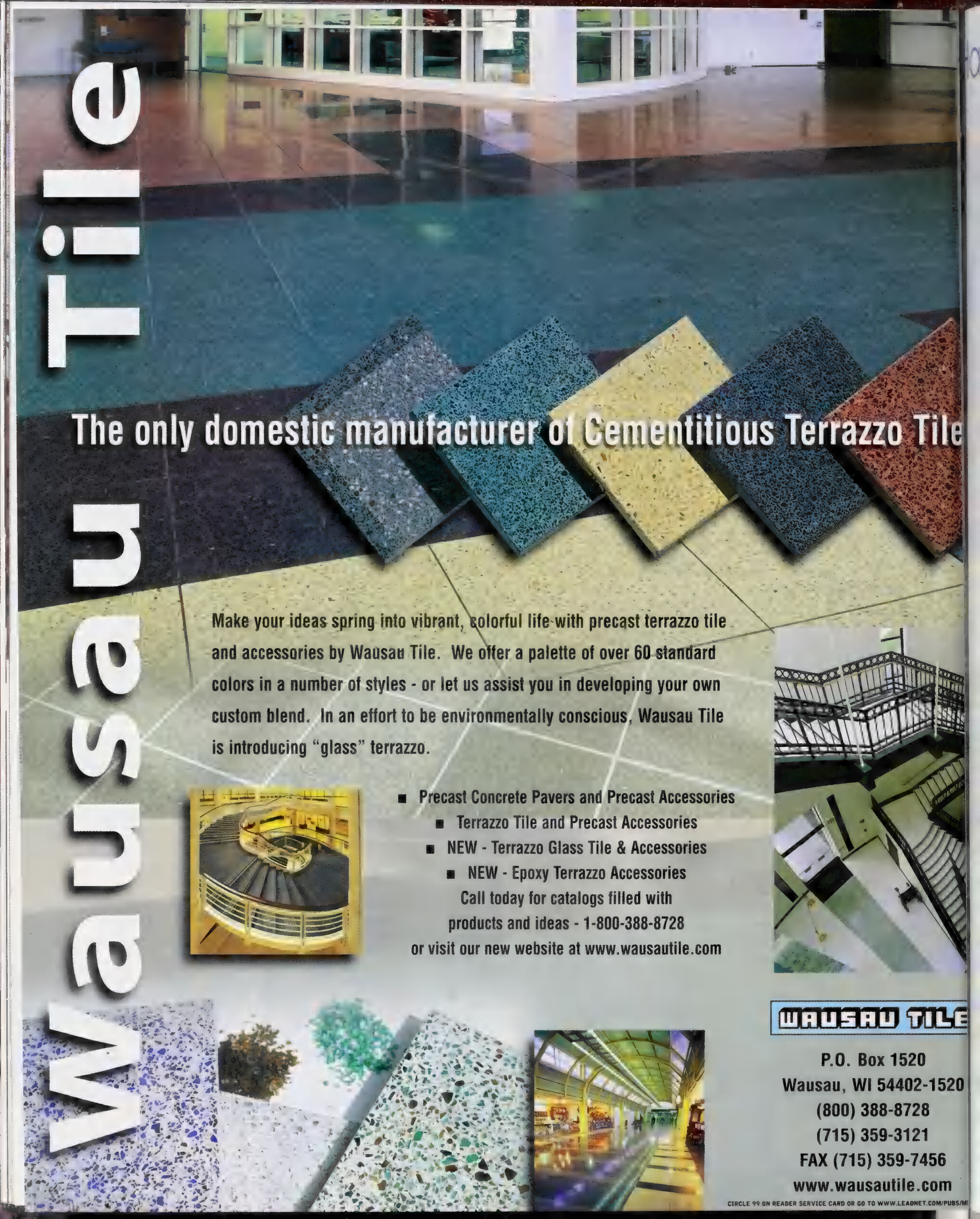

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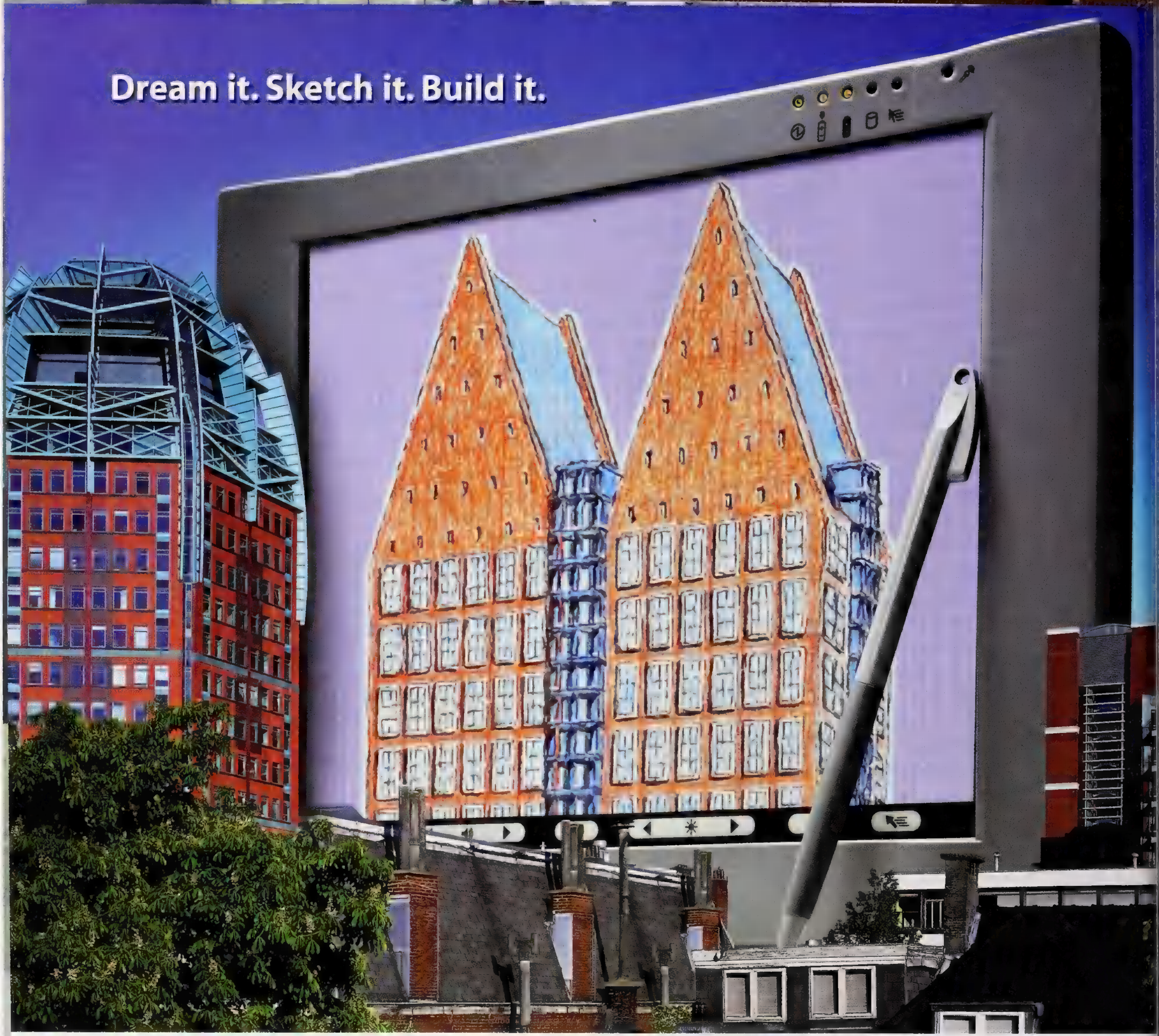
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E-documents require due diligence

By Alan Joch

Gensler, an international architectural planning and design firm, recently received a wake-up call about the treacheries of working in the Electronic Age. The firm had hired a third-party service to host an extranet for sharing documents and e-mails with a client using a Web browser. The client originally asked that all communications, including requests for information (RFIs), be handled electronically, and it didn't require anyone to make backup hard copies. The project progressed as planned, a model of e-collaboration, until the extranet provider decided to upgrade its computer system one weekend.

"On the following Monday, we tried to look at some past RFIs," recalls Ben Fisher, AIA, a Gensler vice president based in San Francisco. The firm discovered it was anything but a quiet weekend for the extranet's host. The upgrade had inadvertently wiped out all past RFIs associated the project, destroying an archive of information that was essential for creating new responses. Fortunately, despite the client's "electronics only" request, Gensler had made hard copies of everything. "As a practical matter, if a question comes up, it's easier to have hard copies that you can compare to electronic files," Fisher explains. That nod to tradition helped the architect reconstruct the lost information.

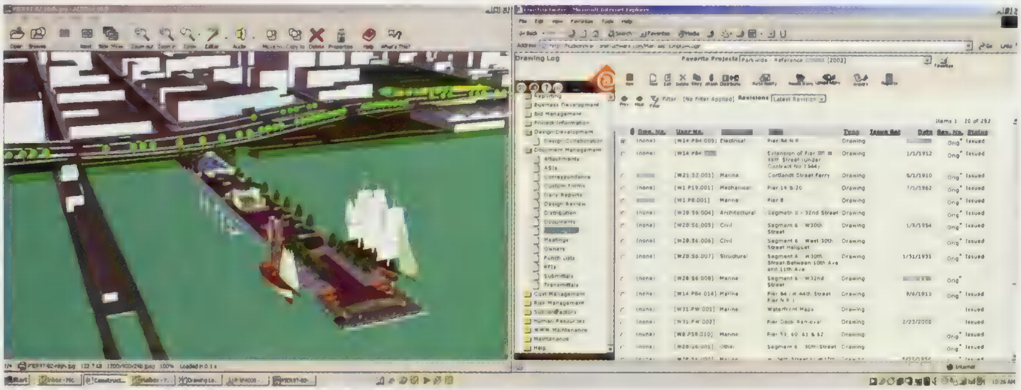
Fisher and others now warn that lost data and a host of other electronic-document traps are more than just an inconvenience. They may open up an architectural firm to an array of potential liabilities that can cost millions in lost time and punitive damages. "We're seeing software and electronic documents creating more opportunities for architects to be found liable," says Gunther Carrle, an attorney with the Design Professional Group at the law firm Powell, Trachtman, Logan, Carrle, Bowman & Lombardo, in King of Prussia, Pennsylvania. "We see a situation where disasters are waiting in the wings," adds Bruce Lombardo, who along with Carrle cochairs Design Professional Group, which specializes in representing A/E firms.

Few architects question the conveniences of automation, from better communications with coworkers, clients, and contractors to design drawings that are easier to create and revise than hand-drawn counterparts. But experts caution that convenience shouldn't induce complacency. Electronic files and e-mail may also make it easier for firms to suffer from a host of new types of liability claims.

E-threats

According to attorneys and architects, major threats associated with electronic documents include design errors introduced by glitches in CAD software; unauthorized access or modification of architectural drawings; damage claims resulting when computer crashes lead to missed deadlines; and expenses associated with gathering widely dispersed data for lawsuits. So far, threats appear to outnumber actual claims. Carrle says in the past four years he has come across "very few cases" that involve design errors linked to software problems. But he fears that as electronic communications become the norm—spurred on by Internet-based collaboration—flawed data and other problems will become "more and more of an issue."

For now, the biggest headaches for his firm's clients center on discovery requests, the rights by litigants to receive copies of documents and correspondence relating to a lawsuit. In the past, complying with such requests may have involved merely pulling a few folders from a filing cabinet and making copies. Today, however, a firm may have to scour the e-mail inboxes of dozens of staff members, as well as search for files on scores of hard drives, personal electronic organizers, and backup tapes that archive records from central network servers. The hunt for all the documents relating to a case isn't only time-consuming and expensive; the size of the task could easily mean that an e-mail message left on a home-office computer or a document stored on a field rep's laptop goes undiscovered, which could make the firm vulnerable to charges of withholding information. "E-mail is the gift that keeps on giving because it's so



Keeping track of the paper trail is critical to the Hudson River Park Trust, a group of more than 50 companies that are giving a face-lift to the Hudson River waterfront in New York City. They use Constructware to manage documents online.

Alan Joch is a technology and business writer based in New England. Contact him at ajoch@monad.net.

www For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at ***architecturalrecord.com***.

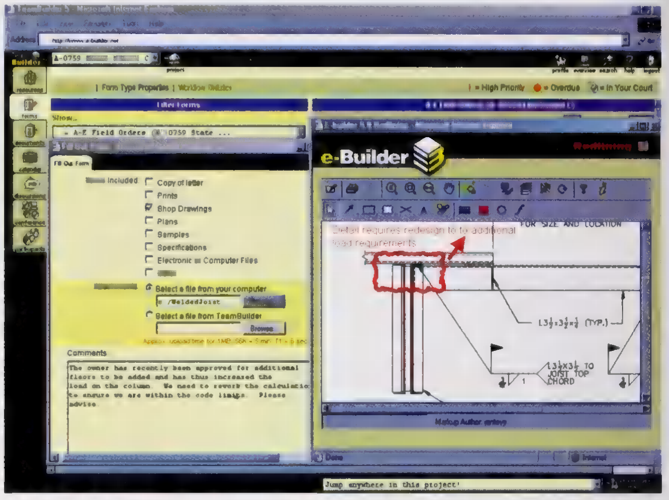
hard to get rid of,” quips Michael R. Overly, a lawyer with the e-business and IT group of Foley & Lardner, a Los Angeles law firm. “If you’re sued, [a large volume of] e-mail can make it extremely expensive to respond to a discovery request.”

Architectural clients of Powell, Trachtman have suffered in other ways, including the failings of extranet hosts, similar to what Gensler experienced. In one case, an extranet provider didn’t have sufficient computing resources to support a large design project. The massive drawing files and flood of electronic communications overloaded the extranet to the point of shutting it down. The client threatened to hold the architect responsible for lost time, but eventually relented when the extranet host upgraded its data center and the project got back on track. Lombardo says this incident illustrates the need for architects to write contracts that limit liabilities for technical problems over which they have no direct control.

Carrle also worries about how easy it is to use (or misuse) electronic information. “I’ve seen a number of situations where an electronic document was used for a purpose our client didn’t intend,” he says. In one instance, a client sent out preliminary CAD drawings that weren’t to final scale. These shop drawings became the basis for the building’s ductwork. When the error surfaced, the firm had to defend itself against an expensive change order.

Formal policies

How can firms protect themselves from these new types of liabilities? The first step, say Carrle and Lombardo, is to craft a company-wide policy that covers technology use, electronic communications, and confidentiality. They encourage firms not to treat this as purely a technology concern. “This is a management issue,” Carrle says. “These liabilities can have a cost and exposure impact on the entire firm, and it’s essential that all executives become well-versed in the dangers and in their company’s formal procedures.”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Among the components of this policy are guidelines on what type of information gets distributed electronically, and even what file format it should be in before it’s sent out. In addition, management must understand what electronic files and information exist, how

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they're organized, and how to retrieve them quickly, says Lombardo. He advises firms to educate their staff about possible surprises, such as files thought to be deleted from a hard drive that in fact are retrievable to those who know how to use data-recovery software. "Develop a written policy to control the creation, maintenance, destruction, archiving, and organization of electronic data," Lombardo says. "It's critical to have a written policy. That forces you to decide how to save information and where to store it." Architects can also contact the technology committees of their local AIA chapters to share information about sound policies and procedures.

ALL FIRMS SHOULD HAVE WRITTEN POLICIES TO CONTROL THE CREATION AND MANAGEMENT OF ELECTRONIC FILES.

Firms also should set limits on how long to save e-mail messages. "A lot of companies are adopting policies that after 30 or 60 days, e-mail messages are destroyed," Overly says. "If the firm then gets a discovery request, at least it knows it has only 30 to 60 days of e-mail messages to go through."

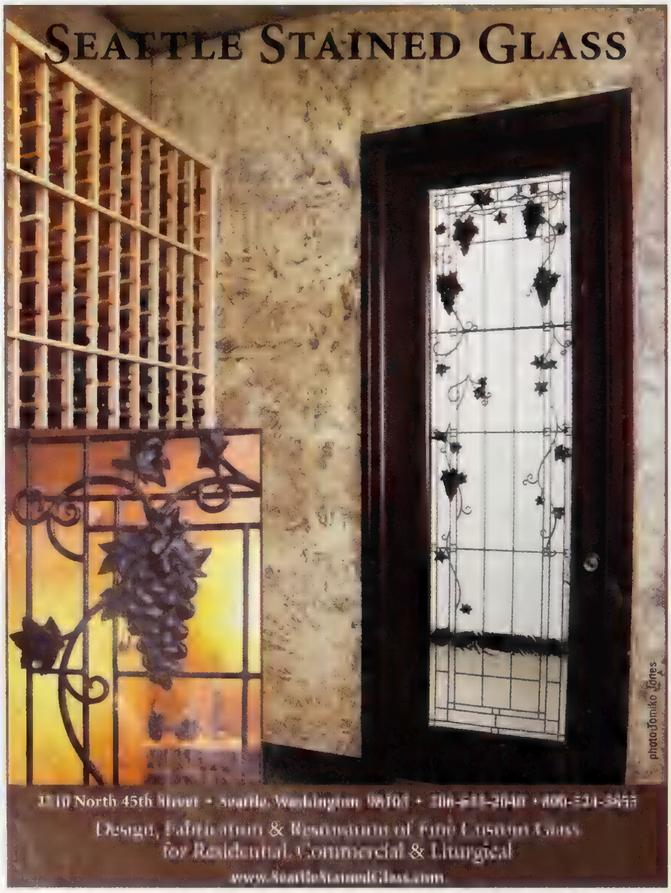
In some cases, architects may be held responsible for errors in drawings that were introduced through glitches in their design software. Software licensing agreements typically shield software makers from such claims, which puts the burden of proof on the firm that due diligence went into the selection and use of the software it runs, including how thoroughly staff were trained to use it. "Firms need to document why they selected the particular software," says Lombardo.

As Gensler realized, hard copies of documents still have a role to play today. "Most firms with whom I discussed this issue are asking that hard copies take precedence over electronic documents," Fisher says. "So if any questions arise over discrepancies between the two, everyone agrees to rely on the hard copy."

He says that architects often send both types of files to clients, often with the electronic versions serving as "shop drawing" iterations that lead up to the final design. "Architects need to communicate with clients about what they're getting in the electronic format. The key issue is that clients understand that electronic drawings done at the working-drawing phase may not exactly match the final product," Fisher says.

Carrle urges architects to treat Web-site collaboration with more formality than exists today. "Up to now, we've still been in the 'gee whiz' stage," he says. Unfortunately, this attitude can result in contracts that don't clearly spell out responsibilities when a collaboration Web site crashes, or indicate how confidentiality of project information will be protected. Well-documented security procedures are necessary to prove the authenticity of documents in any subsequent litigation, he says. Contracts need to show how participants will guard the integrity of documents posted on a collaboration site, he adds.

Finally, Lombardo suggests that architects apply a higher level of formality to their e-mail messages. "People write in a conversational tone, rather than in a tone of formal business restraint," he says. Before you hit "send," ask yourself if there's anything in your message that could come back to haunt you in a lawsuit. "Don't shoot from the hip," Lombardo advises. In the Electronic Age, you could end up shooting yourself in the foot. ■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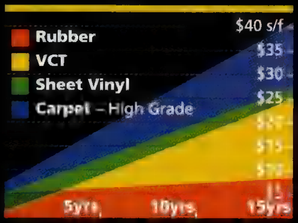

Source: *How to Make Business Decisions for Facility Flooring*, Suzanne [illegible], AIA, CFM

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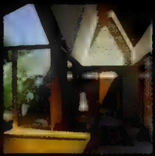
Somerville, MA

Reeve Residence
Cutler Anderson Architects
Bainbridge Island, WA



Agosta House
Patkau Architects Inc.
Vancouver, BC

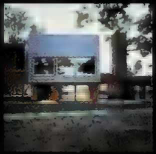
Merit Award

Jackson-Triggs Niagara Estate Winery
Kuwabara Payne McKenna Blumberg Architects
Toronto, ON

Kansas Plains Wedding Chapel and Reception
Rockhill and Associates
Lecompton, KS

View Silo House
RoTo Architects, Inc.
Los Angeles, CA and Livingston, MT

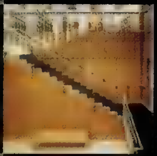
River Tower and Studio
Anderson, Mason, Dale Architects
Denver, CO



Albrecht Residence
Salmela Architect
Duluth, MN

Citation Award

Gosline Residence
Bohlin Cywinski Jackson
Seattle, WA



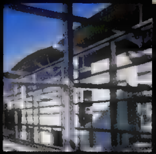
Beaverton City Library
Thomas Hacker and Associates Architects Inc.
Portland, OR

Nicola Valley Institute of Technology
Busby + Associates Architects Ltd. and Equilibrium Consulting Inc.
Vancouver, BC

Sisson Cottage
Bohlin Cywinski Jackson
Wilkes-Barre, PA

The Jones Farmstead
Salmela Architect
Duluth, MN

Avis Ranch
Fernau & Hartman Architects, Inc.
Berkeley, CA



Gilmore Skytrain Station
Busby + Associates Architects Ltd. and Fast + Epp
Vancouver, BC

Congratulations to the selected firms of *The Wood Design Awards, 2002 Program* offered through Wood Design & Building and Wood Le Bois magazines. Visit **www.WoodDesignAwards.com** for more information on the selected entries and to register for the 2003 Program. We gratefully acknowledge our sponsors and supporting associations, and also thank our jurors: Brian MacKay-Lyons, RAIC, [HON] FAIA, Lawrence W. Speck, FAIA, and Jeremiah Eck, FAIA.

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Impact-Resistant Systems: Security in a Tiffany Setting

A New Generation of Windows and Doors is Taking the Coast by Storm.

It has been a decade. Still, we are talking about Hurricane Andrew. Andrew, upgraded last month by federal researchers from a Class 4 to a Class 5 storm, was the costliest natural disaster in U.S. history. In the past century, only two other hurricanes of similar magnitude have struck the U.S. mainland: Camille in 1969, the unnamed storm that hit the Florida Keys in 1935.

Andrew packed winds of 165 mph and came within 20 miles of a direct strike on downtown Miami. It was directly responsible for $26.5 billion in damage. More than 135,000 single-family homes were destroyed or damaged; 160,000 people were left homeless.

Subsequent analysis yielded the observation that up to a quarter of the losses attributed to Andrew were attributable to construction that failed to meet codes, poor enforcement of codes, and deficiencies in the codes themselves.

In the 10 years since Andrew, building codes in Florida, Texas, the Carolinas and other coastal states have undergone significant overhauls, many of them focused on vulnerable window openings.

Windows and doors were universally found to be the weakest building link, and their failure has been shown to lead to a domino effect that ends in catastrophic losses during major storms.

The highest priority amendment for all retrofits and new construction, according to code officials from Florida to New York, are impact-resistant windows and doors.

This continuing education section is intended to familiarize readers with the new code demands and details of a new generation of impact-resistant glass products with which to meet the new codes.

Florida Led the Change

Florida recently implemented the nation's first statewide building code. The most dramatic change: the new Florida Uniform Building Code requires approved impact-resistant glazing in windows and doors (or other protection devices).

Just a few months later, the Falls Church, Va.-based International Code Council, a body created in 1994 by officials of Building Officials and Code Officials International, Inc. (BOCA), International Conference of Building Officials (ICBO), and the Southern Building Code Congress International (SBCCI), developers of the three model codes used throughout the U.S., issued a similar mandate: windows and doors would be required to be assembled using impact-resistant glazing or shutter systems to lessen the hurricane threat.

Fourteen Texas counties also have adopted the stricter codes, and they are expected to be implemented statewide by the end of the year.

The strengthened codes are intended to improve construction techniques in order to prevent losses during natural disasters.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **Impact-Resistant Systems: Security in a Tiffany Setting**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 210, then follow the reporting instructions on page 274 or use the Continuing Education self report form located at *architecturalrecord.com.*

Learning Objectives

At the end of this article you will be able to:

- Understand the codes that apply to hurricane and other severe weather regions
- Identify the features and benefits of a window system compared to shutters
- Know how to correctly select and specify impact-resistant window & door systems

The new impact-resistant glass, eloped specifically for the Southeast—the ion of the U.S. most vulnerable to ricanes—has recently become, or soon l become, a dictate of local codes in stal regions from Texas to New York. nufacturers are finding architects cifying it in Kansas, Iowa and other Plains tes to help combat tornado disasters.

e Case for Impact-Resistant Glass

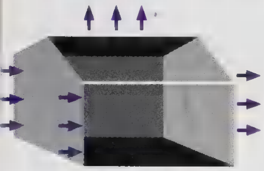
rricane-force winds create tremendous ssures on a building: a 140-mph wind hurricane accompanied by wind of this ed would be classified a Class 4 Saffir rm), generating 80 pound per sq ft (psf) wind load on a 4-x-8-ft window, translates o a total load of 2,560 pounds of pressure the window. No annealed glass pane can thstand that kind of pressure.

Although hurricane winds, themselves, ert tremendous damaging pressure, a large rcentage of hurricane damage is not from e wind itself, but from airborne debris at, in severe cases can include entire roofs, e limbs, etc.

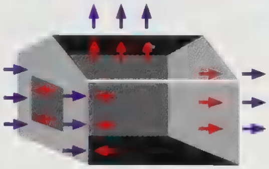
When windows fail, as a result of either wind pressure or breakage by flying bris, there is a near-immediate escalation of pressure within the structure as essurized outside air rushes to find a low-pressure pocket and expand. The tion causes tremendous lift on the roof, frequently of sufficient force to lift the of from the house. Once exposed, interior walls and ceilings, not designed to ithstand such forces, are overturned.

Building failure during Andrew, according to a 1996 study by The Johns opkins University, was primarily a result of negative pressure and/or induced ternal pressure overloading the building envelope. Entry doors, especially ench doors (and wood and metal double doors) were prone to failure. indows, especially sliding glass doors were susceptible to failure from wind essure and the impact of debris. (In most cases frame systems were found tact, but only because the glazing had already failed.)

WHY IMPACT-RESISTANT GLASS IS SO IMPORTANT



LLY ENCLOSED BUILDING
90" gauge and .100" gauge interlayer minated glass windows and doors are tough. heir durable interlayer can withstand emendous blows from flying debris, thus ducing the likelihood of an impact fracture. ith reduced inward rush of air on the indward wall, the likelihood of a structure ttaining a volatile internal pressure is reduced



OPENING IN WINDWARD WALL
In the midst of a high-winded storm, structural openings like failed doors or windows compromise a home's structure. When pressurized outside air rushes to find low-pressure pockets of air and expand, the force may be enough to physically blow off a roof.

When window and door loss occurred, interior damage from wind and rain ntrusion was substantial. Even where structural systems were intact, many omes were uninhabitable for long periods of time because of water damage to nteriors. Nearly two-thirds of all homes damaged by Andrew suffered damage to vindows. The Johns Hopkins study suggests that an opening of only five percent n the windward side of a structure will allow full pressurization of the interior, xerting uplift pressure on the roof and lateral pressure against interior walls.

Storm shutters—from sheets of plywood to electric retractable systems, vere shown to reduce the impact of the storm, by 30-to-50-percent, but hutters are not guaranteed to protect windows from hurricane-force winds. During Andrew, metal gratings and shutters were severely bent, even penetrated by wind-born debris.

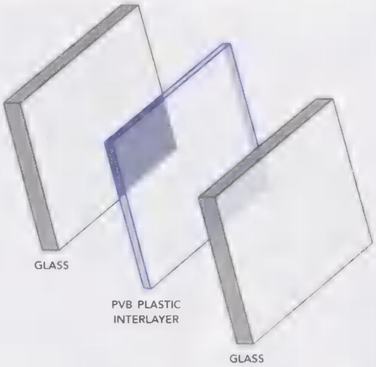
The use of storm shutters to protect the windows and doors requires a homeowner to physically activate the retractable systems or to engage the non-mechanical systems. One of the benefits of using an impact-resistant glazed system vs. a shutter system is the "no-worry, always-ready-to-protect" feature. Impact-resistant windows offer other advantages:

1. 24-hour protection, seven days a week. Whether home or away, the window is protecting the home. Shutters need to be closed or added before the storm.
2. If you are out of town, it may cost money for the homeowner to contract someone to put shutters up – or every single time the homeowner leaves during the storm season, the shutters will need to be put up.
3. Panel shutters or plywood take up valuable storage space when not in use.
4. Many roll-down shutters operate on electricity. If the power goes out, shutters may not be able to be put in place.
5. No unsightly shutter components are visible on the home or business.
6. If the homeowner puts up shutters or boards, when away from the home, it is evident the homeowner is absent. Security issues may arise as a result.
7. Many shutters can be labor intensive, and therefore costly, to install
8. A family remaining in the house during a storm, is not forced to be in a dark, enclosed, shuttered environment.
9. If the window were to be broken, glass tends to adhere to the interlayer. This reduces the potential for serious injury.

Often, the effect of a hurricane is not unlike an explosion. Nearly three-quarters of the injuries from the 1995 bombing of Oklahoma City's Alfred P. Murrah Building were caused by flying glass.

Since Oklahoma City, glass manufacturers and structural engineers have worked to develop a new generation of heat-hardened and chemically treated glass, experimenting with new interlayers and completely new impact-resistant window systems, including mullions, frames and anchors.

The new impact-resistant residential glass, similar to car windshields and aircraft windows, is now making its way to the retail marketplace. Typically, the new impact-resistant laminates contain at least a .090" gauge layer of polyvinyl butyral (PVB) or a similar type interlayer sandwiched between two sheets of at minimum $^{1}/_{8}$-in annealed glass.



The "glass sandwich" will break upon a severe impact, but it will not allow the flying object to enter through the glass. The interlayer can withstand tremendous blows from flying debris, and will even resist the impact of a driven golf ball (Tiger drives the ball at about 140 mph). If the glass is broken, the laminate interlayer is designed to remain intact. The adhesion between the interlayer and the lites of glass keeps the broken fragments relatively intact, thus maintaining the internal pressures.

Window manufacturers have engineered systems to meet local codes still evolving in Florida, Georgia, Texas, the Carolinas, New York and other eastern states. These new protective opening systems in many cases include not only impact-resistant glass, but also corrosion resistant hardware.

Glass Alone Does Not a Defense Make

"Many different factors influence the required design load," says the testing and certification coordinator for a major manufacturer, including the wind zone, the mean roof height, whether units are glazed within three feet of the corners of the building, the size and quantity of doors and windows being installed, etc. Please refer to additional online material for greater detail and charts.

Architects must determine design pressure needed for each window in a building, then check sizes and configurations tested by the manufacturer to ensure that the products meet the expected design pressures.

The adequacy of the engineering design and method of attachment of windows and sliding transparent doors of all types is critical to the performance of window and door systems for applications in areas subject to wind exposure. Wind loads should be adequately transferred to the supporting structure.

Some multiple wide/high combinations will require a structural mull or can be framed into a separate opening. Designers must note differences in performance levels of various glass types and select the glass make-up that meets the required pressure.

Designers should note that heat-or-chemically strengthened glass will be required for picture units or large fixed lites in order to achieve passing performance levels.

"Do not make the mistake of believing that because you order a window or door with laminated glass, that it is necessarily impact-resistant. In order for a product to be certified as impact-resistant, it must be tested in a complete window/door system. The design of the overall sash/frame greatly affects the outcome of the testing," says the source.

Architects should look for laminated-glass systems engineered specifically to comply with coastal building codes. New code-compliant window systems feature added mass to carry the heavier weight of a laminated glass sash. Foam-filled-center weather stripping creates airtight seals. Frame corners are reinforced with structural corner keys and injected with silicone for added durability and resistance to water infiltration.

In tests conducted in accordance with ASTM E-1886 and ASTM E-1996, Metro-Dade County Protocol PA201 and PA203, SSTD 12-97 and TDI 1-98, some new laminated window systems have been shown to withstand winds up to 205 mph winds and 65 mph driving rains. In addition, laminated glass products provide nearly 100% resistance to harmful UV rays. The added protection of the interlayer gives the homeowner peace of mind in knowing that their draperies, floor coverings, furniture, etc. will not fade.

Are My Design Options Limited?

Over the past two decades, populations along high-risk coastlines have increased significantly. The population of Florida, alone, has increased by more than 50 percent since 1988.

The Oceanic and Atmospheric Administration estimates that by the year 2010, the population of Southeastern coastal areas and other hurricane-prone areas of the country (18 states are regarded as "hurricane-prone") will have grown to 73 million people.

At the same time, Hurricane Andrew redefined the way the public and public agencies view the risk of hurricane damage to homes. The size of losses from Andrew proved that hurricane damage estimates have, historically, been seriously underestimated.

In the wake of Andrew, unprecedented code changes occurred. Those code changes, in concert with technological leaps in glass design, pushed forward-looking manufacturers to essentially recreate their entire product lines and seek certification of new hurricane-resistant systems for a residential market in which homes were growing larger and more grandiose. Some manufacturers retrofitted existing product lines and offer a limited range of certified impact-resistant products; others have created new code-compliant lines that include a full range of window types and sizes in impact-resistant glass.

The result is a new generation of window products that meet virtually all the design options available with non-laminated windows.

"There are now vast product options available in impact-resistant product lines, with a tremendous variety of custom shapes, sizes, trim and hardware options," says a manufacturer's representative. "The bottom line: builders will be able, in these markets, to construct virtually any look they want."

A common characteristic to be aware of, however, is that while annealed-glass laminates are virtually distortion-free, heat-strengthened glass will exhibit some distortion due to the process of heating the glass to achieve the benefits of added strength.

It should also be noted that monolithic (non-insulated) glass, although not providing the same insulating value of a standard dual-pane insulated product, can be manufactured with a gray or bronze tint to provide added benefits for solar heat gain reduction or to meet the well-known "turtle code" now applicable in many coastal areas.

With many state and/or local codes now requiring compliance with the IECC (International Energy Code Congress) as well as the windborne debris requirements, manufacturers are scrambling to come up with a product that gives the consumer the best of both worlds.

However, this is easier said than done. In order to meet the stringent energy code requirements set forth in many coastal regions such as North and South Carolina, an insulated product is required. With the initial "push" to manufacture an impact-resistant system for the Florida market, there wasn't a concern to provide product that met stringent insulating values. Thus, window and door manufacturers focused on the monolithic (single-pane) laminated product to meet the impact-resistant codes. This product works for Florida (where energy codes are not enforced at this time), but it does not meet the codes mandated in some other coastal areas.

The use of an approved shutter system along with an insulated window or door product meeting the design pressures required for the coastal areas does meet both the energy and windborne debris codes.

Knowing this is not always the choice of a homeowner, window and door manufacturers are working hard to develop an impact-resistant insulated glazing system to comply with both of these codes.

Because of the larger sized units requiring thicker glass to meet the impact and cyclic tests, it is a challenge to design a glazing shelf sufficient to handle a $^9/_{16}$" lite of laminate, an insulated glass spacer and yet another $^1/_8$" lite of annealed or tempered glass. There is also a minimum air space required to be able to obtain the optimal energy performance; therefore manufacturers may be required to redesign an existing impact-resistant system to be able to gain all of the benefits.

Another constraint is getting the insulated laminated product to withstand the intense pressure cycles required to meet the codes. The addition of a glass spacer and another lite of glass typically causes the glazing unit to "roll" while under heavy loads. This makes the use of a structural silicone critical in most applications.

As more and more jurisdictions mandate the energy requirements along with the windborne debris requirements, the need for low-e insulated impact-resistant glazing is becoming a key issue.

Assessing Code Compliance

The Miami-Dade protocol (PA 201, PA 203), considered the most stringent in the nation, has become the optimal standard for testing of impact-resistant glazing systems. Window systems are subjected to an impact of a nine-pound 2X4 projected at a speed of 50-ft-per-second, and are then subjected to 9,000 positive/negative pressure cycles.

This testing meets the requirements of SSTD 12-97, TDI 1-98, ASTM E1886 and ASTM E1996.

The IBC references ASTM 1886 and ASTM E 1996. BOCA and UBC fall under the IBC.

The IBC references the ASCE 7-98 standard to determine wind loads, thereby requiring a combination +/- dual-performance grade. The positive pressure required is typically lower than the negative pressure. The reason for the positive pressure being lower than the negative pressure is due mainly to the characteristics of dynamic air flow and the effect it has around a building or structure. The water performance is only required to meet the positive pressure requirement.

Certified new laminates not only meet or exceed the toughest code requirements for hurricane protection, but also offer these additional benefits:

- **Safety**: laminated glass resists penetration from accidental impact, and, if broken, glass fragments adhere to the interlayer, thereby reducing the danger of serious injury. Certified products meet CPSC, CFR 1201 and ANSI Z97.1 safety glazing standards.
- **Sound control**: the new laminates are effective in controlling sound transmission.
- **UV protection**: laminates screen out 99 percent (up to 380 nanometers) of the sun's most damaging rays, reducing glare, fading of carpets, draperies and furnishings.
- **Security**: they protect against forced entry and resist repeated blows from hammers or thrown rocks and meet the ASTM F-1223 (Class 1) forced entry standard.

Code-approved window systems can be less expensive to install than windows protected by shutter systems—about 17 percent less expensive than windows with accordian shutters; up to 50 percent less expensive than windows with roll-up shutters.

A study conducted by Orlando, Fla.-based Associated Cost Engineers compared laminate windows with regular wood-shuttered windows. It found that a system of laminated glass (for a home in the $100,000-$120,000 range) cost about $12,500 for materials and labor. Regular glass windows with roll-up shutters cost more than $25,000, according to the study, and regular glass windows with accordian shutters cost nearly $16,000. (The study was based on a theoretical, code-approved model home in Dade County with 1,632 sq. ft. of living area.)

The Threat Is Growing

The risk of property damage and loss in hazard-prone areas grows along with population, and as noted earlier, coastal populations are on the rise.

Florida, the state most at risk from hurricanes, accounts for the largest share of insured coastal property exposure. From 1988 to 1993, the value of insured property in Florida went from $565.8 billion to $871.7 billion and at the current rate of growth will soon surpass $1 trillion, according to the 1996 John Hopkins study.

The physical properties of impact-resistant glass with a .090-in PVB interlayer are as follows:

Refractive Index: 1.48
Visible light transmittance, clear: 0.88
Shading coefficient, clear: 0.88
UV Screening, up to 380 nm: 0.99
Solar transmittance: 0.69
Solar heat gain coefficient: 0.75
Relative heat gain: 189

While one does not usually think of New York as a state exposed to hurricanes, Long Island is a highly exposed region. Coastal property exposure for New York increased from $301.7 billion to $595.6 billion between 1988 and 1993.

Concurrent with population increases in hazard-prone areas, there is evidence that the future will bring more intense hurricanes (Saffir-Simpson Categories 3-5) In the wake of Andrew, researcher and forecaster William Gray said in a Time magazine interview "We're going to see hurricane damage like we've never seen it before."

Indeed, there is strong evidence that intense hurricane formation is cyclic, and that we are entering a high-incidence swing of that cycle.

Climate studies, Gray says, indicate we are returning to a period of greater African rainfall, which may cause a return to the more active hurricane seasons typical of the 1940s and 1950s, when 10 major hurricanes struck the continental U.S.

In addition to a greater number of intense Atlantic hurricanes as a result of the rainfall cycle, there is growing concern that global climate may be changing in ways that could increase hurricane frequency and intensity.

We may, however, be able to reduce the level of damage resulting from major storms. Architects now have the tools to combat hurricane-force winds, and they need not sacrifice warmth and clarity of vision to do so.

Today's wind-borne debris resistant systems offer security and attractiveness. Now, you can have both. ■

Click for Additional Required Reading

As part of this CES learning activity, you are required to read some additional material. Some of the test questions below will relate to the additional reading material. Go to www.architecturalrecord.com/CONTEDUC/ConteducC.asp to access the material online. To obtain a faxed copy, contact Corinne Liske at 800-222-2995 ext. 3716 or cliske@weathershield.com.

Learning Objectives

At the end of this article you will be able to:

- Understand the codes that apply to hurricane and other severe weather regions
- Identify the features and benefits of a window system compared to shutters
- Know how to correctly select and specify impact-resistant window & door systems

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 274. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Analysis of Hurricane Andrew yield that up to how much of the losses were attributable to inadequate construction codes.

A: a. $^{1}/_{4}$
b. $^{1}/_{3}$
c. $^{1}/_{2}$
d. $^{2}/_{3}$

Q: 2. In studies, what was shown to be the weakest building link in a hurricane:

A: a. Windows and doors
b. Roof structure
c. Interior walls

Q: 3. A large percentage of hurricane damage is not from the wind itself, but from

A: a. Driving rain
b. Air pressure
c. Windborne debris

Q: 4. The action causes tremendous lift on the roof is:

A: a. Pressurized outside air rushing in to find a low-pressure pocket and expanding
b. High winds blowing up and through building
c. Pressurized inside air rushing out to find a low-pressure pocket and accelerating

Q: 5. Even an opening of only ___ percent on the windward side of a structure will allow full pressurization of the interior, exerting uplift pressure on the roof and lateral pressure against interior walls.

A: a. 5 %
b. 10 %
c. 15 %

Q: 6. The new impact-resistant laminates contain a .090" layer of _____ sandwiched between two sheets of at minimum $^{1}/_{8}$ in. annealed glass.

A: a. Polyisocyanuarate
b. Polyurethane
c. Polyvinyl butyral
d. Polycarbonates

Q: 7. The sash/frame must be included in the testing of a product to be certified as an impact-resistant window door system.

A: a. True
b. False

Q: 8. Code approved window systems can be about ____% less expensive than windows with accordian shutters.

A: a. 12
b. 17
c. 27
d. 32

Q: 9. Category 4 hurricanes can cause "extreme" damage with winds at:

A: a. 111 – 130 mph
b. 131 – 155 mph
c. Greater than 155 mph

Q: 10. When determining exposure categories, shorelines in hurricane prone regions are included in which category:

A: a. Exposure A
b. Exposure B
c. Exposure C
d. Exposure D

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McGraw-Hill Construction's Architectural Record and Weather Shield Windows & Doors

2002 Learning Series

Please join *Architectural Record* and Weather Shield Windows & Doors for a half a day educational program in beautiful Charleston, SC.

DATE:	Thursday, December 12, 2002
TIME:	2:00 p.m. to 7:00 p.m.
PLACE:	Renaissance Charleston (Marriott) 68 Wentworth Street Charleston, SC 29401 Phone: 800-468-3571 *For room reservation & special rate refer to McGraw-Hill Group.*

Scheduled Program

2:00 P.M.	**Welcome and Opening** **Robert Ivy** Editor-in-Chief, Architectural Record
2:15 P.M.	**AIA/CES Program: Code Demands for Impact-Resistant Glass** *Sponsored by Weather Shield Windows & Doors*
3:30 P.M.	**Guest Speakers** **Orrin H. Pilkey**, Director "Program for the Study of Developed Shorelines," Division of Earth and Ocean Sciences, Duke University, along with renounded batik artist, **Mary Edna Fraser**. Discussion will focus on barrier island research and coastal management. Mr. Pilkey & Ms. Fraser have a Columbia University Press book due out in April titled: "A Celebration of the World's Barrier Islands."
4:30 P.M.	**Walking Tour of Charleston** Tour Subject: Charleston – Past and Present **Christopher Rose, AIA/ASID** *Christopher Rose Architects*
5:30–7:00 P.M.	**Cocktail Reception at Old Charleston Jail** *Sponsored by Weather Shield Windows & Doors*
RSVP TO:	Mamie Allegro, *Architectural Record* Phone: 312.233.7400 Fax: 312.233.7403 E-mail: mamie_allegro@mcgraw-hill.com

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Understanding the UL Directory:
Fire-Resistant Assemblies

reating Code-Compliant Designs

Gypsum—hydrous calcium sulfate—is an abundant, naturally occurring mineral quarried for a variety of uses, the most common, of course, being gypsum board. Roughly 90 percent of finished interior surfaces are covered today with gypsum products.

Two molecules of water are chemically bound to the calcium crystal during the formation of gypsum. As a result, gypsum is about 21 percent chemically combined water. One of the many unique properties of gypsum is its ability to give up these water molecules as steam when heated, in a process known as calcination, making gypsum board ideally fire-resistant.

When gypsum-protected wood or steel framing members are exposed to fire, the chemically combined water being released as steam acts as a thermal barrier until the slow process of calcination is completed. The temperature directly behind the "plane of calcination" (the heated surface) is only slightly hotter than that of boiling water, significantly lower than the temperature at which steel begins losing its strength, or wood ignites.

This continuing education section will explore the fire-resistant nature of gypsum board, and more specifically, the Underwriters Laboratories (UL) requirements governing its installation.

Underwriters Laboratories Inc. (UL) is an independent, not-for-profit product-safety testing and certification organization that has performed product safety testing on more than 17 billion products. In 2001, UL conducted 537,277 follow-up visits to audit compliance with product certification requirements, ensuring conformity in UL certified brands.

In this section, readers will learn how to navigate Volume 1 of the UL Fire Resistance Directories and create code-compliant designs using an essentially cut-and-paste procedure utilizing the UL directory.

In Volume 3, you will find hourly ratings for dampers, firedoors, glazing materials and related equipment. In Volume 2 you will find hourly ratings for joint systems, through-penetration fire-stop systems, electric circuit protective systems and duct assemblies. Our focus is on Volume 1, which includes hourly rated designs for beams, floors, roofs, columns, walls and partitions.

We will be looking at hourly fire ratings, how they are determined, and what they mean to the designer. This continuing education section will help design professionals understand hourly fire ratings, how they are determined, and how that applies to your designs. We will take readers through a few sample activities to familiarize them with the process of selecting code-appropriate drywall systems.

Richard A. Piccolo, president of a Hoffman Estates, Ill.-based code services company, and Melissa (Missy) Merfeld, product manager for a Charlotte, N.C.-based gypsum manufacturer will be our guides. Piccolo's firm is a consulting agency specializing in building and fire protection plan reviews, inspections, training and general code consulting services. Piccolo is co-chairman of the Illinois Fire Inspectors Association Codes Standards Committee, and is a past president of the Illinois Council of Code Administrators (ICCA).

The UL Fire Resistance Directory consists of three volumes. The focus today is Vol. 1, with special emphasis on the first 10 pages of the volume—specifically the table on page 1. Understanding this table, entitled "Numbering System For Fire Rated Assemblies", will allow you to determine which design will be best for your project.

It is important to note here that we will be talking, in all cases, about "assemblies" or "systems" because fire resistance is dependent not only on the gypsum products themselves, but also the framing, insulation and joint compounds that are part of the construction package.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **Understanding the UL Directory:** Fire-Resistant Assemblies. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 217, then follow the reporting instructions on page 276 or use the Continuing Education self report form located at *architecturalrecord.com.*

Learning Objectives

At the end of this article you will be able to:

- Learn about the types and fire resistance properties of gypsum wallboard
- Understand how to navigate through the UL Fire Resistance Directory
- Analyze several fire-rated gypsum wallboard assembly designs

Hourly Rating

In Volume No. 1 everything is categorized by hourly rating—beam assemblies, floor assemblies, and floor-ceiling assemblies.

Building codes are based on hourly ratings.

There are two test standards that are used. One of them is ASTM E119, written by the American Society for Testing Material, and it outlines the entire test process: "What are the requirements? How big a piece of assembly? How soon before failure? What's the temperature rise?" This is not established by Underwriters Laboratories. UL does have a similar test: UL 263.

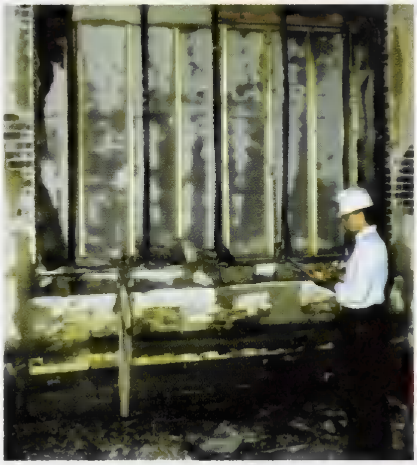


Figure 1

"If we look at the pictures of an assembly after testing," Piccolo says (Figure 1), "we say 'Oh, my goodness, it must have failed. Everything fell off.' But what we need to realize is that it is a post-test photo, and the assembly has been subjected, after the fire, to a hose-stream of certain pressure that will ensure that the structure is still viable."

"This is a two-sided assembly. If you look, there is a second layer of drywall on the other side of the assembly, which has not failed during the course of the test. It would be acceptable for the drywall to fall off on one side, but still maintain the structural integrity on the other side. It's very possible that this assembly did pass, even though we had some burn through the first layer. But (the fire) didn't burn all the way through the assembly."

Tests, by various labs, are routinely conducted to measure many of the characteristics of gypsum board, such as strength, durability, and sound resistance. But the most important tests are for fire-resistance. In a special furnace, typical wall assemblies fitted with thermocouples are exposed to varying temperatures—some in excess of 2100 degrees. Then, the reaction of the assembly is carefully observed. If the wall assembly successfully withstands the high temperatures, an appropriate hourly rating is assigned—one, two, three or four hours.

ASTM E119 follows a Standard Time Temperature Curve when conducting a fire test (see Figure 2). We see in the graph that at 5 minutes the temperature reached 1000 degrees and at 1 hour the temperature is at 1700 degrees. After one hour the temperature continues to climb but does not climb as drastically. At the end of four hours, the furnace is at approximately 2000 degrees.

This is the standard, and no matter whose product is subjected to it, it's always the same. There are variations with the hose stream and other things, depending on the type of assembly, but in standard testing, everything should be tested the same way, so we have a basis of comparison.

It is important to keep in mind that the test results are achieved in a controlled, laboratory environment. In addition, certain UL fire ratings for many system designs are achieved as a result of engineering studies conducted by UL as opposed to actual fire tests in the laboratory. Performance of any fire-rated system in an actual field installation may vary from the published rating, due to the variability of system components, installation techniques which might be used and actual fire conditions.

In testing an assembly, one of the things we are concerned about is heat transmission through the device. When the assembly is in the test furnace, thermocouples are strategically placed over the inside of the wall. Thermocouples measure temperature of the assembly during the test. The average of all the thermocouples cannot exceed 250 degrees over ambient, or normal, room temperature. This is to prevent igniting something on the other side of the wall. In most cases, things will not spontaneously combust at 250 degrees over room temperature. That is one of the test criteria.

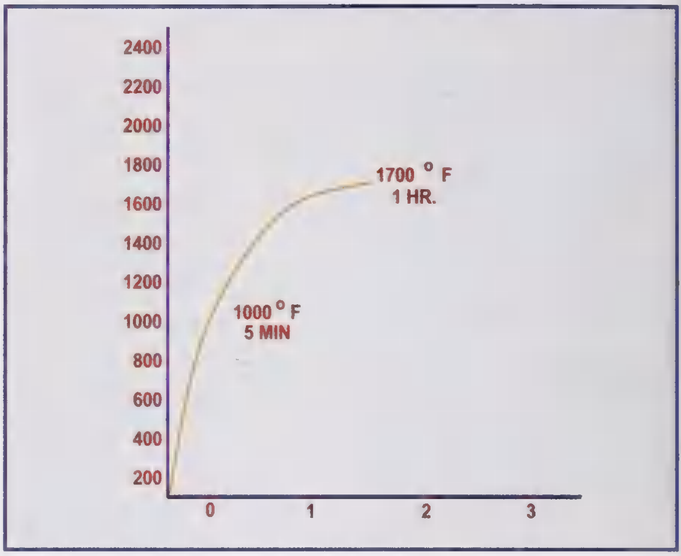


Figure 2

Another test criteria is that at any one particular point on the assembly structure, no single thermocouple can report a temperature of 325 degrees over ambient in any one spot. If a single thermocouple rises above 325 over ambient, the test is "failed." The last point, and this is a fairly important point, is that during the course of the test we do not get a failure—the structure cannot collapse, or show any evidence of burn-through to the other side of the tested assembly. During the course of the test, the assembly has to maintain its structural integrity. If it's a one-hour assembly, it's a one-hour test—not 59 minutes. A variance of 30 seconds is acceptable. A two-hour assembly is tested for 120 minutes, a three-hour assembly is a three-hour test.

Which Type of Drywall Is Most Fire Resistant?

There are three essential core types. Drywall comes in regular core, Type X and Type C. All drywall affords some degree of fire protection. After all, it's rock, it's water, it's difficult to burn. Regular drywall is fire resistant. It's composed mainly of gypsum. Type X drywall contains additional ingredients that enhance its fire-resistive properties. The basic component added to Type X to give it superior resistance is fiberglass. Finally, systems tested in the laboratory utilizing Type C gypsum wallboard are the most fire resistant. The make-up of Type C drywall is, generally, proprietary, but its fire resistive properties are superior to Type X.

The most important characteristic of drywall, say fire officials, is that it will not burn. "Statistics show that in recent years, fewer people have died in fires in the U.S.," says the Gypsum Association. "Naturally, there is no single reason for the decline. But the diminished number has a high correlation with the increased use of gypsum products and other fire-resistant building materials," they say.

"The gypsum in the core of the board actually emits steam when exposed to fire and retards transfer through the panel. This slowdown provides extra time to evacuate a room or building."

"Ask yourself this question, says Piccolo: 'How do I know what type of drywall is being installed? Is it regular drywall, Type X, or Type C? The drywall will be stamped if it is Type X or Type C.' The UL stamp on the back of the gypsum wallboard Advises you if the board is Type X or Type C in addition to letting you know that the wall board is consistent in its construction, that you have quality, and performance. Since the stamp will be on the back of the drywall, you will have to inspect it prior to completion of the assembly."

Navigating the UL Directory

Specification of fire-resistant gypsum systems starts at the UL home page and becomes a relatively simple, essentially cut-and-paste, web-based exercise that eliminates oversight and provides the contractor with a detailed wall, ceiling or floor configuration.

On the left-hand side of the UL home page (www.UL.com):

- Click on "Certification."
- Click on "Fire-Resistive Assemblies and Systems."
- Click on "Numbering System for Fire Rated Assemblies."

Up comes a chart of fire-rated assemblies that becomes your numeric guide to detailed specifications for walls, ceilings and floor systems (Figure 3).

You will learn how to select a numeric code that relates to the project detail in question by doing an exercise later in this article. When the results page comes up, click in the box under 'Link To File' column to view design detail.

The computer will display assembly details, including a cross-section and a narrative of assembly methods and procedures. You can then cut and paste assembly details directly into specifications. Most of the gypsum-related assemblies can be found in construction groups 500-599. It should be noted that the UL directory is not copyrighted, and that, in fact, the UL encourages direct transfer of its assembly specifications to your bid and building plans.

The UL's Fire Resistance Directory Vol. 1, available online, provides a guide to the designs within. The first 10 pages of Vol. 1 give specifiers an explanation of terms and standards that apply to the UL assembly designs.

"I am always surprised, in my teaching, to find how few professionals have read this," Piccolo says. "These 10 pages tell you how to use the book. The answers to many of the most frequently asked questions about drywall systems are found here."

A few key items from the first 10 pages that we should be aware of are as follows:

- **Page 2, column 2:** "Nails and Screws." "Screws meeting ASTM C1002 or ASTM C954 may be substituted for nails, one for one, when the head diameter, length, and spacing equal or exceed the requirements for the specified nails." So can screws be substituted for nails? Yes! Provided the fasteners meet the above requirements.
- **Page 3, column 1:** "Gypsum Board Orientation." Vertically applied gypsum board is applied with the long edges parallel to the framing members to which it is attached. Horizontally applied gypsum board is gypsum board applied with the long edges perpendicular to the framing members to which it is attached. The orientation is critical to ensure that assemblies are fire-resistant.
- **Page 3, column 1:** "Gypsum Board Joint Treatment," (Fire Taping). The key point under this heading is "Base layers in multi-layer systems are not required to have joints or fastener heads taped or covered with joint compound."
- **Page 4, column 2:** "Steel Joists." This section explains that the joist sizes in a design are minimums. "Joists which exceed the specified minimum size may be used provided the accessories are compatible."
- **Page 5, column 1:** "Gypsum Board" The main point of this section is that gypsum board thicknesses specified are minimums. "Greater thickness of gypsum board is permitted as long as the fastener length is increased to provide penetration into framing that is equal or greater than that achieved with the specified gypsum board thickness and fasteners." *Note: Additional layers of gypsum board can be added to any design.*
- **Page 8, column 1:** "Blanket Insulation." We learn in this section that in a ceiling and floor or roof system the addition of insulation, if not specified in the design, may reduce the hourly rating of the assembly. So, in assemblies of the G500, L500 and P500 series, you may add insulation provided an additional layer of gypsum wallboard is added to the assembly. In wall assemblies, insulation is optional unless otherwise stated.
- **Page 9, column 2:** "Wall and Partition Assemblies." "The size of studs are minimum unless otherwise stated in the design. The spacing of studs are maximum unless otherwise stated in the design."
- **Page 10, column 1:** "Metal Thickness." Metal thicknesses are minimums unless the design indicates a specific gauge. If metal thickness is not specified in the design, reference the table on page 10 of UL Vol. 1 for gauge and metal thicknesses.

"I can't tell you how many jobs I've been on where they didn't follow this guide and put the drywall on the wrong way. It, then, has to come down upon inspection," Piccolo says. "You can take this information directly from the website, so that when the contractor bids the job, and when he builds it, he has no reason not to put it up the right way."

	NUMBERING SYSTEM FOR FIRE RATED ASSEMBLIES TYPES OF PROTECTION								
	Membrane Protection						Direct Applied Protection		Unprotected
Groups of Construction	000-099	100-199	200-299	300-399	400-499	500-599	600-699	700-899	900-999
Floors-Ceilings A,B*,or C* Concrete and Cellular Steel Floor	Concealed Grid Sys.	(Reserved)	Exposed Grid System	(Reserved)	Metal Lath	Gypsum Board	Misc.	SFRM +	Unprotected
D, E* or F* Concrete and Steel Floor Units	Concealed Grid Sys.	(Reserved)	Exposed Grid System	(Reserved)	Metal Lath	Gypsum Board	Mastic Coating	SFRM +	Unprotected
G, H*, or I* Concrete and Steel Joists	Concealed Grid Sys.	(Reserved)	Exposed Grid System	(Reserved)	Metal Lath	Gypsum Board	Misc.	SFRM +	Unprotected
J or K Concrete	Concealed Grid Sys.	(Reserved)	Exposed Grid System	(Reserved)	Metal Lath	Gypsum Board	Misc.	SFRM +	Unprotected
L or M* Wood Joist or Combination Wood and Steel Assemblies	Concealed Grid Sys.	(Reserved)	Exposed Grid System	(Reserved)	Metal Lath	Gypsum Board	Misc.	SFRM +	Unprotected
Beams: N or O* for Floor-Ceiling	Concealed Grid Sys.	(Reserved)	Exposed Grid System	Batts & Blankets or Mineral and Fiber Boards	Metal Lath	Gypsum Board	Mastic Coating	SFRM +	Unprotected
Roof-Ceiling: P, Q* or R*	Concealed Grid Sys.	(Reserved)	Exposed Grid System	(Reserved)	Metal Lath	Gypsum Board	Misc.	SFRM +	Unprotected
Beams: S or T* Roof-Ceiling	Building Units	(Reserved)	Exposed Grid System	(Reserved)	Metal Lath	Gypsum Board	Mastic Coating	SFRM +	Unprotected
Wall & Partition: U, V or W*	Bldg. or Partition Panel Units	(Reserved)	Insulating Concrete	Wood Stud Gypsum Bd. Lath and/or Plaster	Metal Stud Gypsum Bd. Lath and/or Plaster	Misc.	Metal Panels Gypsum Bd. Lath and/or Plaster	SFRM +	Masonry
Columns: X, Y or Z*	Building Units	Pre-fabricated	(Reserved)	Batts & Blankets or Mineral & Fiber Boards	Metal Lath & Plaster	Gypsum Board	Mastic Coating	SFRM +	Reserved)

The prefix numbers with an asterisk (*) and the design numbers indicated ■ "Reserved" in the above table are for future expansion and to cater to new types of systems

Figure 3

Analyzing the Assembly

What follows is an analysis and discussion of the details of one of UL's fire-resistant assemblies. Additional exercises, intended to familiarize the readers with the process, will be part of the additional reading material at the end of this section.

How do you find an assembly when you do not already know the design number? Start by using the chart on page 1 of the UL Fire Resistance Directory Vol. 1 (Figure3).

Your first step will always be to determine your Group of Construction in the far left-hand column. Does your project's floors-ceilings call for concrete and cellular steel floor? If so, your design will start with A, B or C. Are you looking for a fire rated wall or Partition assembly? Your desired design will start with a U, V or W.

Next decide what type of protection your project will utilize (moving right across the chart). Your first choice is "Membrane Protection." Membrane Protection refers to the mechanical fastening of protection to the structure, as gypsum wallboard is fastened to studs. Some other building materials that are within the Membrane Protection category are concealed grid and metal lath. Our next option is "Direct Applied Protection," protective materials like mastics or spray-applied fire-resistive materials. The last column is "Unprotected." Unprotected refers, generally, to brick or block masonry.

To review, look for your Group of Construction first and then scan over to your desired type of protection. The intersection of these two items will determine the design numbers that are suitable for your project.

The chart on page 1 of the UL Directory Vol. 1 is the same as the chart online at the UL website. So if you follow the same instructions online you will find a design suitable for your project (Figure 3).

As promised, this is an exercise to assist you in getting comfortable in using the table on page one of Vol. 1. Starting with your Group of Construction…

Question: What is an assembly number for a wall & partition system with Metal Stud, Gypsum Board, Lath and/or Plaster ?

Refer to the Numbering System for Fire Rated Assemblies chart. In the first column, you select the type of construction and then look across for the series with gypsum board.

You should come up with the letter designation U, V or W, and 400-499 series. An assembly that would fall under this designation is V438 (Figure 3).

UL Design No. V438 is a non-load bearing steel stud wall design with hourly ratings for 1,2,3 and 4 hours. You can see from the drawing that both a one- hour (left) and four-hour (right) wall is detailed. The call-out numbers on the drawing correspond with the numbers in the text.

Item 1 tells us that floor and ceiling runners are not shown but must be channel-shaped from a minimum 25 MSG corrosion-protected steel. Minimum sizes and screw patterns are also addressed.

Item 2 discusses steel studs as shown in the design. Steel studs need to be channel-shaped and fabricated from minimum 25 MSG corrosion-protected steel. You are referred to item four's chart (Figure 5) for minimum widths depending on the hourly rating you chose for your project. Note that the assembly calls for the studs to be cut 3/8-to-3/4-in. less than assembly height to allow for heat expansion.

The one-hour assembly shown in the drawing shows batt or blanket insulation. Again, item four's chart (Figure 5) will tell you if insulation is required. If insulation is not required, you may add it to your wall if desired.

Gypsum board orientation, thickness and core type is described in item 4. For instance, a double layer, two-hour wall should be constructed with the first layer vertically applied with joints centered over a stud while the outer layer can be applied vertically or horizontally (see Figure 5 for minimum stud depth and thickness of panels). Notice on Figure 5 that a one-hour wall assembled with 2-1/2" minimum stud depth and a single layer of 1/2-in. Type C wallboard requires mineral wool insulation. This is the only design option that requires insulation.

Type X or type C are also designated under item 4. The chart tells us that all the systems require either 1/2" or 5/8" type C except for two of the systems. The single and double-layer assemblies using 5/8" drywall can be type X. (Each manufacturer has its own core designations for type X and type C. Refer to the back of your Vol. 1 UL Directory for reference).

Item 5 concentrates on fasteners. Although not shown in the drawing, Type S or S-12 steel screws are required. Length and spacing of fasteners can change with each system.

Item 6 is not shown in the drawing , but describes the joint treatment necessary to complete the assembly. One point to remember: only the outside layer requires tape and joint treatment.

Finally, number 7 and 8 are optional and refer to furring channels and siding, brick or stucco applications. If the project calls for siding, brick or stucco, these products must meet the requirements of the local building code.

Try one more.

Question: What is an assembly number for a wooden floor system using drywall?

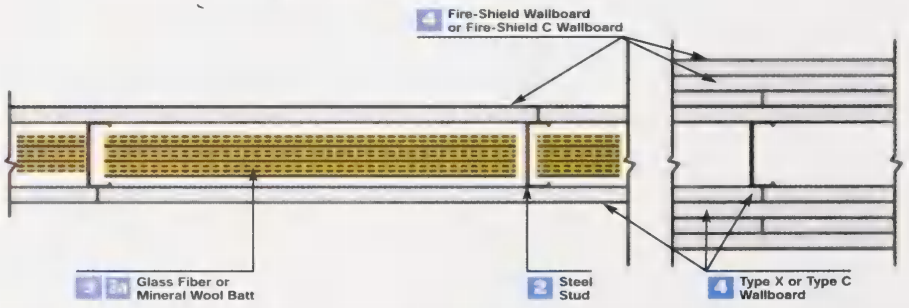
You should come up with the letter designation L or M, and 500-599series. An assembly within this designation is L558.

When you are finished, you should be comfortable finding your way around the UL Directories, and your newfound familiarity should save you considerable time and aggravation in the design of fire-rated structures. ■

UL Design No. V438

Nonbearing Wall Ratings – 1, 2, 3 or 4 Hour
(See Items 3 & 4)

1, 2, 3 or 4 Hour Fire Resistive Wall Non-Loadbearing


4 Fire-Shield Wallboard or Fire-Shield C Wallboard
3 3a Glass Fiber or Mineral Wool Batt
2 Steel Stud
4 Type X or Type C Wallboard

1 **Floor and Ceiling Runners:** (Not Shown) Channel shaped, fabricated from minimum 25 MSG corrosion-protected steel, minimum width to accommodate stud size, with minimum 1" long legs, attached to floor and ceiling with fasteners 24" o.c. maximum.

2 **Steel Studs:** Channel shaped, fabricated from minimum 25 MSG corrosion-protected steel, minimum width as indicated under Item 4, minimum 1-1/4" flanges and 1/4" return, spaced a maximum of 24" o.c. Studs to be cut 3/8 to 3/4 in. less than assembly height.

3 **Batts and Blankets:** (Required as indicated under Item 4) - Mineral wool batts, friction fitted between studs and runners. Minimum nom thickness as indicated under Item 4. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

3a **Batts and Blankets:** (Optional) - Placed in stud cavities, any glass fiber or mineral wool insulation bearing the UL Classification Marking as to Surface Burning Characteristics and/or Fire Resistance. See Batts and Blankets (BKNV or BZJZ) Categories for names of Classified companies.

4 **Gypsum Board:** Gypsum panels with beveled, square or tapered edges. For single layer systems gypsum panels applied vertically with joints centered over studs. For single layer systems (constructed with 1/2" thick board) gypsum panels applied vertically or horizontally with vertical joints centered over studs. For two layer systems gypsum panels to be applied vertically with joints centered over studs and staggered one stud cavity on opposite sides of studs. Outer layer of gypsum panels may be applied vertically or horizontally for systems constructed with 1/2" thick board. Vertical joints in adjacent layers staggered one stud cavity. For three and four layer systems inner layers to be applied vertically with joints centered over studs and staggered one stud cavity on opposite sides of studs. Vertical joints in adjacent layers staggered one stud cavity. Outer layer may be applied vertically or horizontally. The thickness and number of layers for the 1, 2, 3 and 4 hour ratings are as follows:

(see Figure 5)

5 **Fasteners:** (Not shown)-Types S or S-12 steel screws used to attach panels to studs (Item 2).

Single layer systems: 1" long for 1/2" and 5/8" thick panels, spaced 8" o.c. along edges of board and 12" o.c. in the field of board.

Two layer systems: First layer – 1" long for 1/2" and 5/8" thick panels, spaced 16" o.c. Second layer – 1-5/8" long for 1/2", 5/8" thick panels, spaced 16" o.c. with screws offset 8" from first layer.

Three-layer systems: First layer – 1" long for 1/2", 5/8" thick panels, spaced 24" o.c. Second layer – 1-5/8" long for 1/2", 5/8" thick panels, spaced 24" o.c. Third layer – 2-1/4" long for 1/2" thick panels or 2-5/8" long for 5/8" thick panels, spaced 12" o.c. Screws offset minimum 6" form layer below.

Four-layer systems: First layer – 1" long for 1/2", 5/8" thick panels, spaced 24" o.c. Second layer -- 1-5/8" long for 1/2", 5/8" thick panels spaced 24" o.c. Third layer – 2-1/4" long for 1/2" thick panels or 2-5/8" long for 5/8" thick panels, spaced 24" o.c. Fourth layer – 2-5/8" long for 1/2" thick panels or 3" long for 5/8" thick panels, spaced 12" o.c. Screws offset minimum 6" from layer below.

6 **Joint Tape and Compound:** (not shown) Vinyl or casein, dry or premixed joint compound applied in two coats to joints and screw heads of outer layers. Paper tape, nom 2" wide, embedded in first layer of compound over all joints of outer panels.

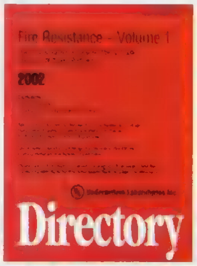
7 **Furring Channels:** (Optional, not shown, for single or double layer system) - Resilient furring channels fabricated from minimum 25 MSG corrosion-protected steel, spaced a max of 24" o.c. Flange portion attached to each intersecting stud with 1/2" long Type S-12 steel screws.

8 **Siding, Brick, or Stucco:** (Optional, not shown) - Aluminum, vinyl or steel siding, brick veneer or stucco, meeting the requirements of local code agencies, installed over gypsum panels. Brick veneer attached to studs with corrugated metal wall ties attached to each stud with steel screws, not more than each sixth course of brick.

Figure 4

Rating, Hr	Min Stud Depth	No. of Layers & Thks of Panel	Min Thks of Insulation (Item 3)
1	3-5/8	1 layer, 5/8 in. thick	Optional
1	2-1/2	1 layer, 1/2 in. thick	2 in. thick
2	1-5/8	2 layers, 1/2 in. thick	Optional
2	2-1/2	2 layers, 5/8 in. thick	Optional
3	1-5/8	3 layers, 1/2 in. thick	Optional
3	1-5/8	3 layers, 5/8 in. thick	Optional
4	1-5/8	4 layers, 1/2 in. thick	Optional
4	1-5/8	4 layers, 5/8 in. thick	Optional

Figure 5



Click for Additional Required Reading

As part of this CES learning activity, you are required to read some additional material. Some of the test questions below will relate to the additional reading material. Go to www.architecturalrecord.com/CONTEDUC/ConteducC.asp to access the material online. To obtain a faxed copy, contact Missy Merfeld at 704-365-7494 or MSMerfeld@NationalGypsum.com.

Learning Objectives

- Learn about the types and fire resistance properties of gypsum wallboard
- Understand how to navigate through the UL Fire Resistance Directory
- Analyze several fire-rated gypsum wallboard assembly designs

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 276. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Base layers in multi layer systems are not required to have joints or fastener heads taped or covered with joint compound.
A: a. True
b. False

Q: 2. The process of calcination makes gypsum board ideally fire-resistant because:
A: a. The gypsum material – hydrous calcium sulfate – expands when exposed to heat and acts as a barrier.
b. The surface of the gypsum board conducts the heat to the more fire-resistant materials in an assembly.
c. When exposed to fire, water molecules in the board turn to steam and act as a thermal barrier.

Q: 3. Fire resistance ratings apply to which:
A: a. Assemblies or systems
b. Gypsum products themselves

Q: 4. The standard test the UL Directory uses for fire ratings of assemblies is:
A: a. ASTM E119
b. UL No. L558
c. ANSI/UL 1709

Q: 5. The added component in Type X gypsum board that gives it a superior fire resistance over regular gypsum board is:
A: a. Water
b. Calcium
c. Fiberglass

Q: 6. What is the fire rating for $^{5}/_{8}$" Type X Wallboard?
A: a. 1 hour
b. 2 hour
c. No fire rating

Q: 7. Screws can be used as an alternate to nails in wallboard designs
A: a. True (provided diameter, length and spacing equal or exceed nails)
b. False

Q: 8. Gypsum is approximately ___% water:
A: a. 11 %
b. 21 %
c. 31 %
d. 41 %

Q: 9. Gypsum wallboard assemblies are found in:
A: a. Volume 1
b. Volume 2
c. Volume 3

Q: 10. When searching for a UL design using the numbering chart, the first item to consider is the Type of Protection.
A: a. True
b. False

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Designing for Occupant Comfort

Providing true occupant comfort at reasonable cost goes far beyond maximizing R-values and controlling thermal losses. It requires careful systems planning, a thorough understanding of building envelope thermal characteristics, and methods of controlling air and moisture flow. Spray polyurethane foams can provide economical, high-performance insulation, air barriers and moisture barriers in new construction and in renovation and restoration projects.

In a well-designed interior space, questions of comfort never occur to those who inhabit it. They simply *are* comfortable. For the designer, the goal is to exert such perfect control over the dynamic interior environment that those within remain totally unaware of the array of structural elements and technologies responsible for their comfort.

Only by continually balancing interior temperature, air flow volume, velocity and moisture content can the designer ensure occupant comfort under all circumstances.

Naturally, while a pleasant ambience is the result, it is a pragmatic systems approach that provides the means, beginning with a careful analysis of thermal gradients, and potential air, moisture, and vapor flow paths throughout the structure.

With a detailed analysis in hand, the architect can begin to specify the structural elements, construction materials and building techniques that, together, will create total comfort and building integrity.

It is the intent of this learning module to describe how the use of spray polyurethane foam technologies help to control air, moisture and vapor flow, as well as interior temperature.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

Use the following learning objectives to focus your study while reading this month's Architectural Record*/AIA Continuing Education article. To receive credit, turn to page 223 and follow the instructions.*

LEARNING OBJECTIVES

When you have finished this course, you should:

- *understand how thermal gradients, and the flow of air, moisture, and vapor within the structural envelope affect occupant comfort*
- *identify common air, moisture and vapor flow problems that exacerbate discomfort*
- *recognize the benefits of spray polyurethane foam (SPF) in ensuring comfort*
- *distinguish between one-component and two-component SPF applications*

Why spray polyurethane foam?

Spray polyurethane foam (SPF) offers the architect tremendous versatility. It can bond disparate materials, adhere to a plethora of substrates to provide thermal insulation and sound deadening, fill cracks and voids to control air and moisture flow, even as it conforms to virtually any architectural shape or surface configuration that might be used in residential or commercial applications.

SPF products are used for insulating homes, commercial buildings, roofs, storage tanks, cold storage facilities, ducts, pipes and more. Depending on the reactivity of the polymeric mixture and the delivery mechanism, SPF may be supplied as:

- *Poured foam* — where a liquid stream reaches the substrate
- *Spray foam* — where a large quantity of small liquid droplets reach the substrate
- *Froth foam* — where the liquid stream reaching the substrate contains already-nucleated miniature gas bubbles

SPF's versatile physical properties make it useful in perhaps unexpected applications. For instance, in restoration or rehabilitation projects, instead of demolishing the outer leaf of a brick wall to install new wall-ties, rigid SPF can be injected to bond the brick veneer to the inner wall. In construction of the building envelope, SPF products are used mainly to control heat transfer and to provide air and moisture barriers. SPF can provide a complete seamless building envelope, creating a more comfortable indoor environment for the life of the structure. It seals cracks and seams, giving added protection.

SPF can form a seamless bond with building components to create a structurally sound, uniform air-infiltration-barrier system, which retains its superior thermal properties even in the most extreme climates.

All of these roles help SPF to contribute to a comfortable interior environment and extraordinary occupant comfort.

Comfort's thermal component

Economically maintaining desirable indoor temperatures requires a well-insulated building envelope. The higher the R-value of any envelope component (e.g., foundation, wall or roof), the greater the envelope's resistance to heat transfer.

Since the capacity of the heating, ventilating and air-conditioning (HVAC) system must equal the net sum of all heat losses and gains under worst-case weather and building-use conditions, the higher the envelope R-value, the smaller the HVAC system for a given design and envelope configuration.

As with any building mechanical system, the initial capital costs of insulation and other thermal efficiency measures must be balanced against the potential savings in ongoing HVAC operating costs. The final design R-value should be determined by optimizing all cost factors.

Contributions to energy efficiency and perceived occupant comfort are also made by the exterior design and materials selection, building orientation, extent of windows, use of passive solar strategies, and the selection [illegible] interior space geometries, materials, surface treatments and even color [illegible]

Here, we [illegible] confine the discussion to the control of heat transfer, and to the use [illegible] techniques to control air, moisture and vapor flow through the envelope.

Heat transfer refresher

Heat flows from points of higher temperature to points of lower temperature by three distinct mechanisms:

- *conduction*—heat flow through a solid
- *convection*—heat flow from a solid surface to a fluid (liquid or gas)
- *radiation*—heat flow directly from one body or surface to another via electromagnetic waves, without affecting the intervening space (e.g., from a warm person to a nearby cold window surface)

All three of these heat transfer modes occur simultaneously in any real system (though one or two often dominate), and all three can play a role in occupant comfort.

The rate of heat transfer between any two points is determined by the physical characteristics and geometries of the materials and spaces separating them, plus the temperature differential between the two points. For instance, examine the flow of heat through the exterior wall of a residential project on a cold winter day. Assume the heating system is operating properly and that the interior room air is 70°F, while the outside air is 35°F.

Heat will flow from the room air to the wall surface primarily via convection, then through the interior wall by conduction. At the studs, heat will flow from the wall to the studs, then through the exterior sheathing and exterior cladding, all by conduction. Finally, the heat will flow by convection from the exterior cladding surface to the outside air.

If the wall area between the studs—which represents about 90% of the total wall surface—is filled with insulation, heat will follow the same path and transfer methods as outlined above, except through the insulation instead of the studs.

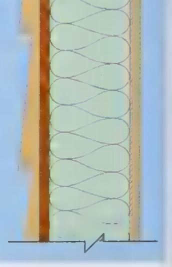
If, on the other hand, the insulation does not exist in the cavity between the interior wall and the exterior sheathing, then heat will not flow through the entire envelope by conduction. Rather, an added convection circuit will carry heat from the interior wall surface into the air in the gap between the wall and the exterior sheathing, and then from the air in the gap to the sheathing itself.

R-value

Every material exhibits its own characteristic resistance to the flow of thermal energy through it. Thermal resistance, R, for a given structural component is the sum of all resistances encountered along the path of heat flow.

Insulation materials are chosen for their high resistance to thermal flow, given in English units as ft^2-hr-F°/Btu at a specified thickness. In an ideal system, without air or moisture flow, the temperature profile of a wall or roof cross-section can be calculated by apportioning the total temperature change across the section to each structural member, in the same ratio as that structural member's R-value bears to the total R-value. (In real systems, R-value can degrade if construction allows air and moisture to move through the envelope.)

Component	Typical R-value
Air film outside	0.15
Siding (metal)	0.70
Sheathing (1/2")	0.64
3" insulation — batt	9.60
Gypsum board (3/8")	0.32
Air film inside	0.61
COMPOSITE (TOTAL)	12.02



Moisture flow

Moisture migration in residential buildings is a particularly important, and at times complex, topic. Apart from water problems related to the plumbing system, moisture problems in residential structures are typically related to liquid water or water vapor finding its way in or out through the building envelope. There are four mechanisms of moisture migration:

- *Gravity* — Downward flow of liquid water due to gravity (e.g., roof leaks or condensation on windows collecting on the sills)
- *Capillary Action* — The movement of liquid water through very narrow spaces (e.g., up through porous masonry or tightly lapped wood siding)
- *Air Transport* — Water vapor carried by air flow (e.g., warm, humid inside air exfiltrating through unintentional gaps in the envelope)
- *Vapor Diffusion* — Transport of water vapor through permeable building envelope materials, by diffusion (from the warm, humid side to the cooler, dryer side)

While any of the four mechanisms can cause major problems in a particular structure, the majority of moisture problems in a residence with sound structure are related to interior surface condensation on windows, uninsulated walls, or cold surfaces within the building envelope.

Vapor flow

Again, it's usually the flow of water in its vapor state, rather than in its liquid state, that leads to most moisture damage in residential construction. However, it is not until this water vapor condenses that real problems develop. Such liquid moisture build-up can cause mold, mildew, rotting of wooden materials, other structural damage, and soaking of insulation materials, reducing their effectiveness.

By far the major moisture migration mechanism is air leakage through the building envelope (infiltration or exfiltration), carrying water vapor with it. The impact of vapor diffusion on moisture migration is relatively small by comparison.

The most vexing problem with moisture migration is that it is a reversible phenomenon in nearly every climate zone in the U.S. In winter, when outside air is cold and dry, moisture tends to flow outward through the envelope. In summer, interior air conditioning generally assures that interior air is both cooler and drier than outside air, so moisture tends to flow inward through the envelope. Condensation will occur under either condition, if the moisture-laden air encounters any surface within the building envelope that has a temperature below the dew point.

General building practice suggests that air/vapor retarders — like plastic film, oil-based or vapor-retarder paints and certain wall finishes — should be installed on the warm side of the insulation to prevent moisture migration through the wall. In climates where moisture migration is seasonally reversible, choice of a location for such an air/vapor retarder is a difficult decision to make.

Fortunately, SPF systems (as well as structural-insulated-panel and insulated-concrete-form systems), may allow designs where no separate vapor retarder is necessary, eliminating the concern over vapor flow direction.

Air flow

Just as heat flows through a material because of a temperature difference, air will flow into or out of a structure due to a difference in air pressure. Air flow, whether infiltration or exfiltration, can be influenced by the following factors:

- The number, size and location of holes, gaps and cracks in the envelope
- Pressure differences resulting from:
  - – ventilation and exhaust fans
  - – chimneys for fuel-fired appliances
  - – wind direction and velocity
  - – the temperature differential between indoor and outdoor air (which can produce a pressure difference called stack effect that increases with building height)

Air barrier systems

The air barrier system within the building envelope is a critically important element for economically controlling moisture and thermal transfer, and for preserving structural integrity. Inadequate air barrier systems allow leakage of air through holes, cracks and gaps in the thermal envelope.

Leaking air can carry humidity to the dew point locations in the building envelope, where resulting condensation can promote black rot and mildew, as well as the deposition of smoke, dust and dirt particles and other contaminants. These unfriendly elements are deposited in building materials through which the air passes on its way into, out of, or through the structure.

For leakage to occur, a difference in air pressure must exist between one side of the air barrier and the other. Such imbalances are common. They can be caused by wind pressure on the exterior; by stack effect, as warm air travels quickly upwards through the building; by exhaust systems purging stale air; and by the mechanical system operator trying (against the odds) to condition the indoor environment for maximum comfort.

Air barrier systems that inadequately control moisture transfer across the envelope adversely affect buildings and occupants in several ways. The most frequent and noticeable include:

- uncomfortable indoor environments
- unnecessarily high heating and air conditioning costs
- accelerated decay of building materials, particularly in walls, cladding systems, windows and roofing
- deteriorating aesthetic appearance of the building's exterior

All of these problems can in some part be attributed to faulty air barrier system design and/or installation. Performance testing of the air barrier system may be carried out using a variety of means, including blower door, large and small smoke generating devices, infrared thermography, window testers and large scale fan depressurization devices.

In most instances, geographical location and indoor environmental requirements are not the major causes of air leakage. The worst leakage areas are mechanical penthouses, soffits, parapets, windows, links connecting below-grade areas to other buildings, and joints between one system and another such as at doors or wall-to-roof joints, and rim joists at foundations and mid-floors.

What makes a good air barrier system?

An air barrier system should be continuously impermeable to air and well-supported structurally so that it remains in place and durable. The air barrier must also be coupled with insulation in such a way that temperatures below the dew point do not occur within the building envelope, under any reasonable combination of interior and exterior temperature/humidity conditions. Theoretically, the air barrier can be located anywhere in the building envelope, providing it meets all of the above criteria.

Potential Air Barrier Locations

A typical residential structure contains a large number of paths by which air can leak into, out of, or through the building shell. These can be sealed and insulated with either single-component or two-component SPF.

Location	*One- or Two-Component SPF*
In Basements and Crawl Spaces	
▪ Headers	✔
▪ Sill plate and rim joists	✔
▪ Duct penetrations and shafts	✔
▪ Conduit, wire penetrations	✔
▪ Hose bib	✔
▪ Windows and surrounds	✔
▪ Doors—cold room and exterior	✔
▪ Wall cracks	✔
▪ Floor–wall junctions	✔
• Crawl space wall insulation	✔
In Attics	
▪ Attic access hatch	✔
▪ Ducting and plumbing stacks	✔
▪ Headers	✔
▪ Recessed ceilings	✔
▪ Behind light fixtures	✔
• Wiring and piping penetrations	✔
▪ Recessed lights boxed with gypsum	✔
In Living Areas	
• Baseboards—interior & exterior walls	✔
• Electrical receptacles and switches	✔
▪ Windows and trim	✔
▪ Doors and framing—exterior, patio, pocket	✔
▪ Dampers and outdoor vents	✔
▪ Fireplace [illegible] seal/loose brickwork	✔
▪ Recessed ceilings	✔
• Plumbing penetrations	✔
▪ Exhaust fan and [illegible] vent perimeters	✔
▪ Electrical wiring penetrations	✔
▪ Cold air return ducts	✔
• Range hoods	✔
▪ Recessed light fixtures	✔

Compartmentalization and decoupling

In renovation and restoration applications, where it is impossible to create continuity of the air barrier because not all of the structural components are accessible, the interior corners of the building should be sealed in order to "compartmentalize" each floor area. The effect would be to reduce the pressures caused by the flow of air around the building inside the wall system.

It is also advisable to "decouple" the building vertically in order to reduce stack effects. This can be achieved by a variety of measures, for instance, in hi-rise buildings, creating elevator lobbies on each floor and controlling air leakage through fire doors and all vertical penetrations. Model building codes require floor perimeters to be fire-stopped; they should be sealed, too, to create an air barrier that will also prevent smoke transfer.

SPF as an air barrier

Field experience shows that spray polyurethane foam can significantly improve the energy efficiency of buildings when it is used as an air leakage control and insulation material or component of an air barrier system. Moreover, recent evidence shows that a better-performing envelope contributes to the health, safety and comfort of the building occupants. Envelope performance, in large measure, depends on a well-designed air barrier, which should:

- be applied with continuity throughout the building envelope
- adhere to supporting structures (be self-adhesive)
- resist peak wind loads, sustained stack effect, and pressurization from ventilation equipment
- provide virtual air impermeability
- offer durability and long service life
- eliminate dew point conditions

Spray polyurethane foams meet all of these criteria. Add to that R-values typically in the range of 6.0 per inch or greater, and their value as a building envelope component becomes clear.

SPF selection

Spray polyurethane foams are available in several formulations, each offering advantages that make that type particularly suitable for certain applications.

One-component SPF

Single-component polyurethane foam is an insulating sealant consisting of a single mix of chemicals in one pressurized can or tank, formulated to cure when exposed to moisture in the air. Single-component SPF, which takes approximately 45 minutes to an hour to cure at 50% relative humidity, finds its primary use as an economical and practical sealant for cracks, small holes, gaps and joints.

Because it needs moisture to cure, care must be taken to avoid problem areas such as confined, nonporous cavities, which may inhibit cure. Also, if the ambient air is too dry, curing can be slowed or nullified, unless the application area can be spritzed with water to enhance cure rate.

Typically dispensed through a straw, a copper wand or a gun-type tool, one-component SPF is applied in a bead or, if filling a small hole, simply dispensed until the hole is full.

While primarily used as an air sealant, one-component SPF can also yield R-values (aged) in the 3.6 to 3.9 per inch range.

Two-component SPF

Fast-curing spray foam results in a higher expansion ratio for the two-component polyurethane foams, which makes them suitable for spray-on insulation applications, as well as for filling larger holes and cavities. They have an R-value (aged) of approximately 6.0 per inch.

Dispensing systems provide a fast and uniform flow of polyurethane foam that can be applied to flat or irregular surfaces and into cavities of all shapes and sizes. (Polyurethane foams generally set in 5 to 10 seconds and expand approximately 30 times.)

Because of SPF's superior adhesion properties, it can seal and insulate structural materials, shapes and geometries used in unconventional architectural designs, where more common batts or rigid foam panels would not install or function properly. Two-component SPF can also be effectively applied in attic spaces where restricted movement and awkward access make sealing and insulating difficult, and it can be used to insulate cathedral ceilings while eliminating the need for venting.

Masonry block party walls, which form chimneys because of their porosity and open cores, can only be sealed effectively with two-component SPF. Two-component SPF also facilitates sealing between stud spaces at the perimeters of drop-ceilings, around plumbing stacks, and around heating and air-conditioning duct penetrations.

Polyurethane foam is combustible, and model building codes require that a thermal barrier be installed on the habitable side of any SPF used on the interior of the structure, except when specifically approved by a building code official based on fire tests specific to the application. Additional study information about thermal barriers is included in the online portion of this educational module (see box below).

SUMMARY

- Spray polyurethane foam (SPF) provides insulation plus continuity of the air barrier system.
- One-component SPF is moisture cured, while two-component SPF is chemically cured.
- One-component SPF is dispensed as a bead for gap and crack filling, while two-component SPF is used to insulate buildings and fill larger holes and voids.
- SPF insulation has become the most economical and practical way to effectively stop air infiltration and exfiltration.
- An insulating air barrier system is a crucial element in controlling moisture, minimizing energy losses and gains, and ensuring structural integrity.
- Proper use of SPF can make a crucial difference in occupant comfort, in both new construction and renovations.

Click for Additional Required Reading

As part of this CES Learning Activity, you are required to read additional material online. To access the material on thermal barriers, visit *www.architecturalrecord.com/CONTEDUC/ConteducC.asp*, or *http://www.plastics.org/ArchRecord/thermalbarrier.pdf*. To obtain a faxed copy of the supplemental material, please call the American Plastics Council at 1-800-243-5790. The test below includes questions based on the online material.

INSTRUCTIONS

- Read the article, "Designing for Occupant Comfort."
- Read the additional web-based materials, which can be found at *http://www.plastics.org/ArchRecord/thermalbarrier.pdf*
- Read and answer the test questions below.
- Fill out the identification data and transfer your answers to the AIA/CES education reporting form on page 276 and submit via mail, or download the form at *www.architecturalrecord.com*

You will receive one (1) AIA learning unit.

TEST QUESTIONS

1. Occupant comfort is dependent on:
   a. interior air temperature
   b. air flow volume and velocity
   c. moisture and vapor flow
   d. all of the above
2. SPF applications are characterized by all but which of the following:
   a. already-nucleated miniature gas bubbles in the liquid droplets reaching the substrate
   b. liquid stream reaching the substrate
   c. no liquid in any form reaching the substrate
   d. a large quantity of small liquid droplets reaching the substrate
3. Faulty air barrier systems' adverse effects can include:
   a. accelerated decay of building materials
   b. uncomfortable indoor environments
   c. both a. and b.
   d. neither a. nor b.
4. Two-component SPF is most commonly used to:
   a. fill tiny cracks and seal joints
   b. fill cavities and large holes
   c. attach drywall to studs
   d. none of the above
5. One-component SPF has an R-value (aged) equal to:
   a. 4.9 to 5.2 per inch
   b. 3.6 to 3.9 per inch
   c. 5.7 to 6.0 per inch
   d. 3.0 to 3.4 per inch
6. Thermal barriers used in conjunction with SPF must:
   a. provide a minimum thermal barrier index of 15
   b. offer protection equivalent to 3/4" gypsum board
   c. comply with time-temperature curves in ASTM B-239
   d. limit SPF to max. 342°F after 10 min. of fire exposure
7. Two-component SPF expands approximately:
   a. 3 to 5 times
   b. 10 times
   c. 30 times
   d. 22 to 25 times
8. A person standing in a 72°F room, near a very cold window:
   a. would radiate body heat to the cold window surface
   b. would lose heat to the window by conduction
   c. would absorb heat from the room air via convection
   d. none of the above
9. One-component SPF would work well as an air barrier:
   a. to fill cracks between baseboards and subfloor
   b. to seal plumbing penetrations in exterior walls
   c. to seal gaps between windows and framing
   d. all of the above
10. Residential moisture problems occur most often when:
    a. water vapor in the air condenses on envelope surfaces
    b. effective air barriers and vapor retarders are in place
    c. rain blows in open windows
    d. vertical decoupling is used to reduce stack effect

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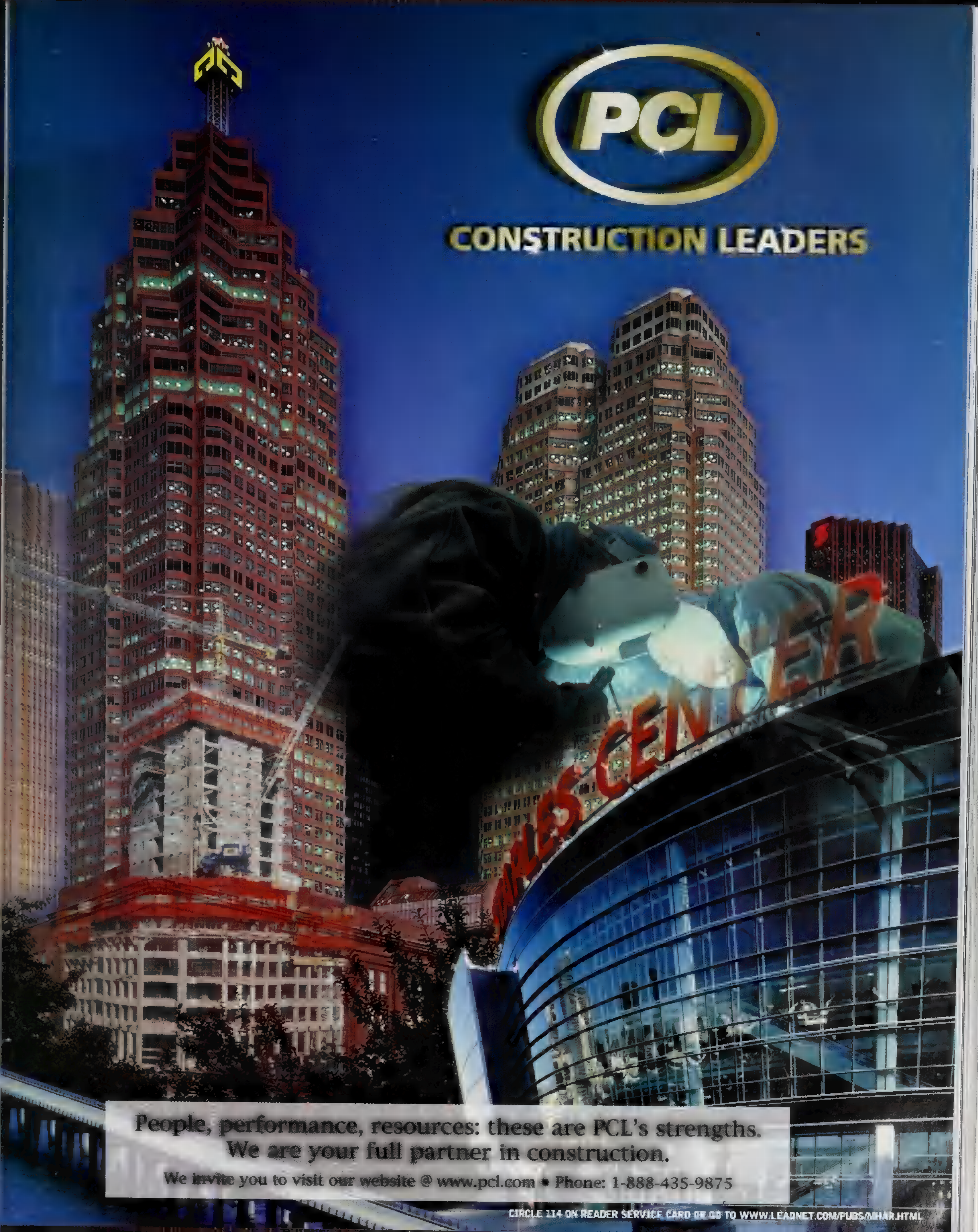

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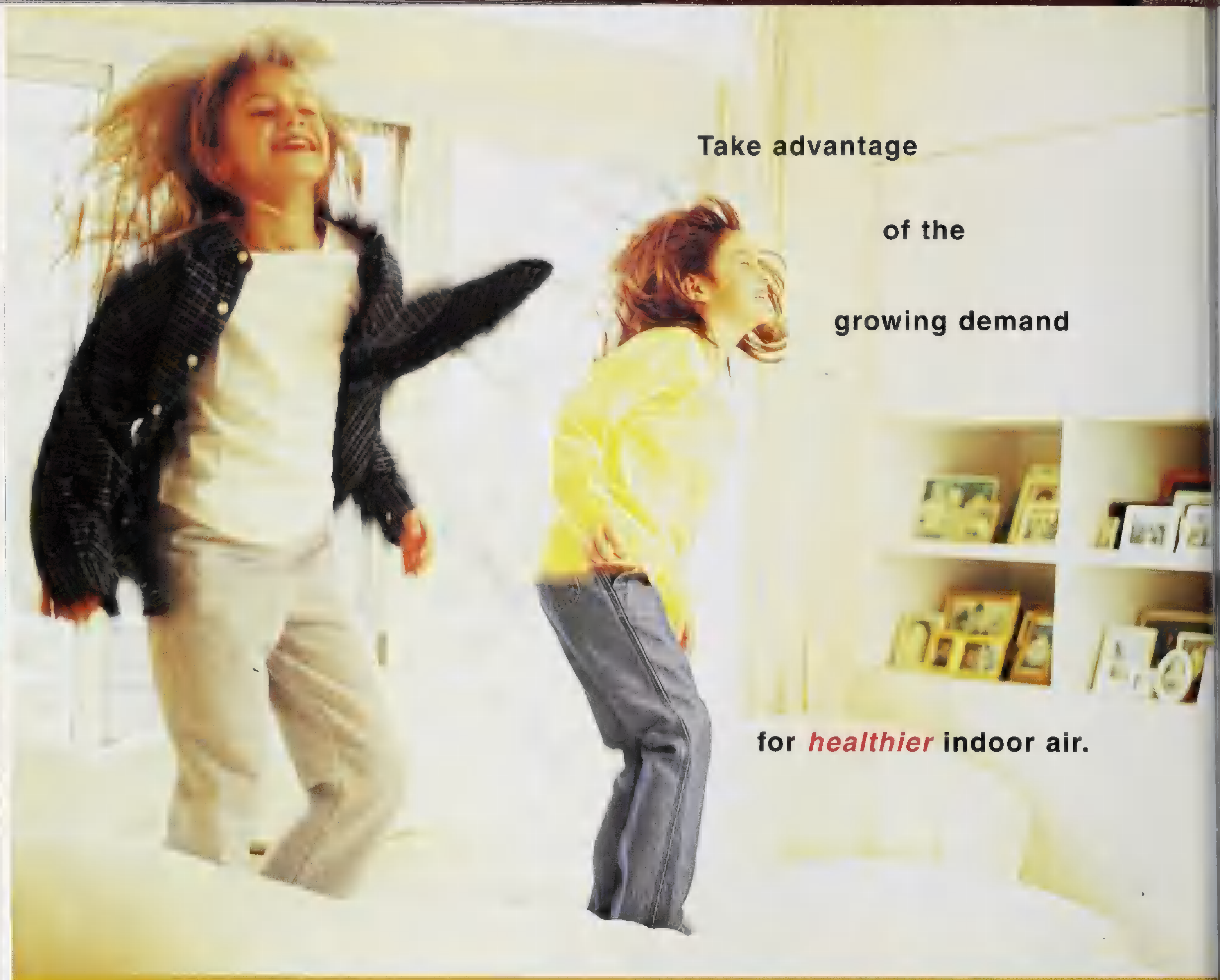

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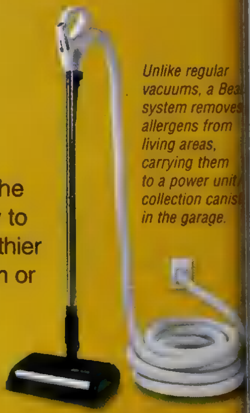
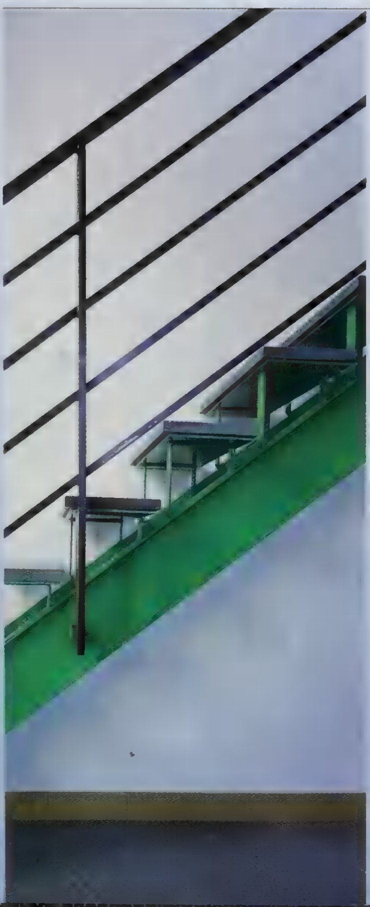

Unlike regular vacuums, a Bea system removes allergens from living areas, carrying them to a power unit/ collection canis in the garage.

RESIDENTIAL

Four sumptuous multifamily dwellings from around the world

Four multifamily-housing projects from across the world are presented here, with an emphasis on private dwellings designed by prominent architects. In Japan, where density and the high cost of real estate are compelling reasons for multifamily dwellings, Manabu Chiba designed Split. Based on Tokyo's unique solid-void pattern, which he discovered as a child when he leapfrogged from one vacant space to another, Split forges connections among the glitches, gaps, and cul-de-sacs of the sparsely available land. The satellite city of Almere, near Amsterdam, is host to a housing project by UN Studio. Its flexible design was motivated by the notion of consumer choice, all too common in the U.S., but radical in Holland, where highly mechanized housing production is the rule. Despite this, the Dutch have typically outpaced the U.S. in quality multifamily housing, with notable exceptions herein: Miller/Hull Partnership's imaginative solution for a small condominium complex built on a tight urban site in Seattle; and Jon Michael Schwarting's oasis of urban outdoor/indoor living spaces. He takes a Corbusian approach to revitalizing common tenement buildings on the Lower East Side of Manhattan. Altogether, these add up to a rich and varied feast. *Jane F. Kolleeny*



BRIEFS

More than one million U.S. households are unable to meet the structural needs of the disabled aging resident, according to an AARP study. Ninety percent of the elderly would prefer to age in their homes, but accessibility problems make this goal unattainable. See http://research.aarp.org/cgi-bin/reSearch.

Home builders are turning to solar electric power and Feng Shui to lure buyers. Solar electric power will become a standard feature in two new Clarum housing communities in northern California. Sales-training director Corinne Hoffman of K. Hovnanian Cos, the 14th-largest builder of housing in the U.S., will offer Feng Shui classes to sales staff and home buyers.

Forty houses have been built so far on a 427-lot subdivision in remote northern California. It is known as Gold Mountain and is popular among retirees. Designed by Taliesin architects and based on designs by Frank Lloyd Wright, the houses are clustered around the Nakoma Resort and Spa, also designed by Wright.

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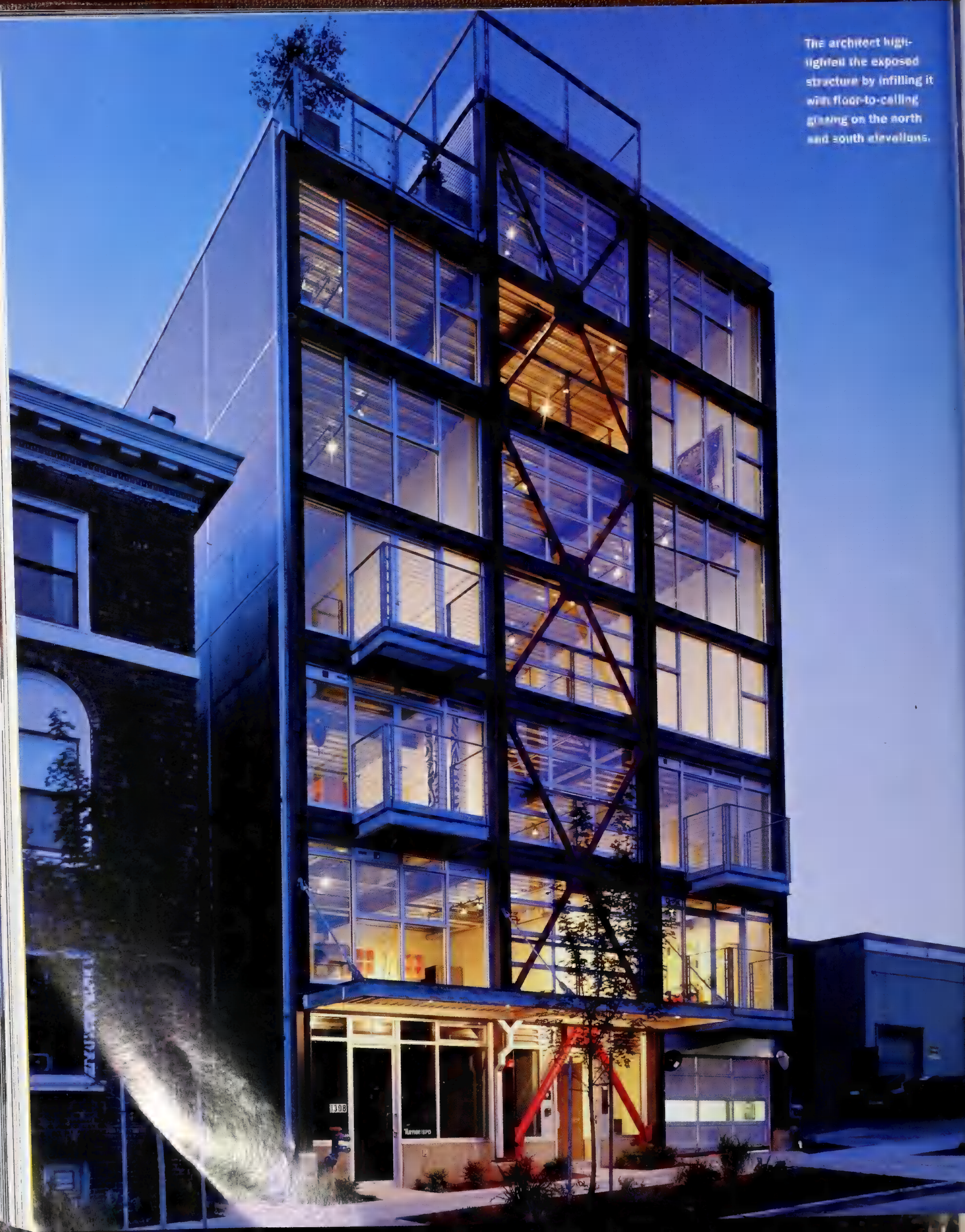


The architect highlighted the exposed structure by infilling it with floor-to-ceiling glazing on the north and south elevations.

1310 East Union, Miller/Hull's striking steel-framed transparent live/work lofts, sing an ode to Modernism

By Sheri Olson, AIA

Taking a stand against suburban sprawl, environmental activist and former high-tech executive Liz Dunn asked the Miller/Hull Partnership to design a sophisticated loft-style condominium project on a small urban lot. "I wanted to give people a reason to abandon their three-car garage McMansions and live in the city," says Dunn.

These eight live/work units sit on a lot formerly occupied by a sex shop in Seattle's Pike/Pine neighborhood, a gritty-yet-hip district of low-rise concrete and brick buildings within walking distance of downtown. The site's small size—40 by 80 feet—appealed to first-time developer Dunn but put pressure on Miller/Hull to maximize the allowable areas so that the project would be profitable. Equally important to Dunn was creating a design that would distinguish itself in a lackluster local housing market. "The client wanted a unique project that was architecturally strong in a city dominated by cookie-cutter multifamily projects," says David Miller, FAIA, of Miller/Hull.

A nondescript apartment building on the west, a fashionable bakery on the east, and an auto repair garage on the north are built up to the property line on three sides. Since the site was not large enough to fit eight required parking spaces, a lobby, and retail space on the ground floor, European hydraulic parking lifts made the project feasible by stacking two cars in a single space. (Appropriately enough for the eco-sensitive design, SUVs don't fit on the lifts.) Another potential deal breaker was a five-story height limit. Since mezzanines are not considered a floor, Miller/Hull was able to achieve a seven-story building by designing double-height units with mezzanines on the upper levels.

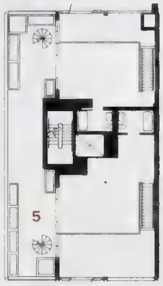
The project's steel frame may have been born out of necessity, but for Miller/Hull it was a golden opportunity to create the project's hallmark transparency. Steel met the noncombustible construction requirements and solved staging problems on the tight site by allowing the contractor, Turner Construction, to fabricate many structural elements off-site. On the south, the exposed steel structure (fire proofed with intumescent paint) is infilled with floor-to-ceiling glass for a light and transparent front facade. By stepping the building back 10 feet from the neighboring garage, Miller/Hull was able to fully glaze the north side, too.

Seismic X-bracing—slender tube steel painted brick red—crisscrosses the central bays outside motorized glass garage doors that

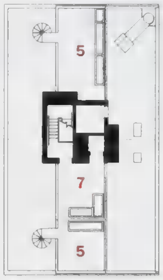
Project: *1310 East Union live/work lofts*
Location: *Seattle*
Owner: *Anemone Partners, LLC*
Architect: *The Miller/Hull Partnership*
Electrical engineer: *Ed David, Jomega*
Mechanical engineer: *Sider & Byers*
Consultants: *Taylor Engineering Consultants (civil engineers); Atelier (landscape architects)*
General contractor: *Turner Construction*

Sheri Olson, AIA, RECORD's *Seattle-based contributing editor, is author of* Miller/Hull *(2001) and architecture columnist for the* Seattle Post-Intelligencer.

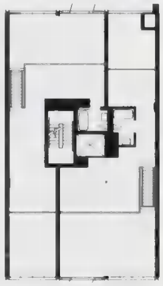
1. *Lobby*
2. *Driveway*
3. *Retail space*
4. *Garage*
5. *Private terrace*
6. *Deck*
7. *Public terrace*



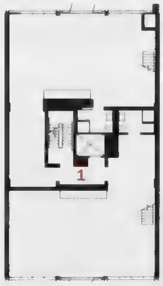
FIFTH FLOOR MEZZANINE



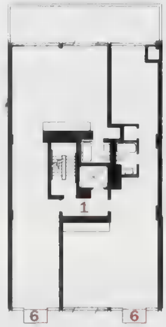
ROOF TERRACE



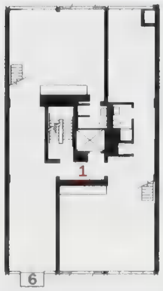
FOURTH FLOOR MEZZANINE



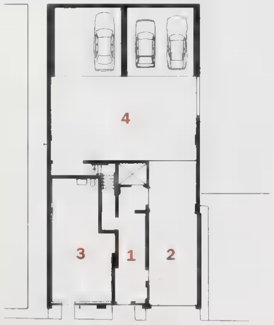
FIFTH FLOOR



THIRD FLOOR



FOURTH FLOOR



GROUND FLOOR

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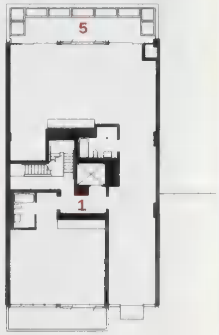
3 M.



SECOND FLOOR

Seismic X-bracing—slender tube steel painted brick red—criss-crosses the central bays outside of motorized glass garage doors that slide up to open entire walls of some units to the outdoors (top left and right). Inside, the loft-style units have a raw industrial quality, with polished concrete floors, steel-plate baseboards, and steel-deck ceilings.

slide up to open entire walls of some units to the outdoors, an appealing feature in the Pacific Northwest's moderate climate. These room-size front porches combine with a scattering of cable-railed balconies to add an extra liveliness and neighborliness to the street. To earn all that glass under the state's stringent energy code required superinsulating the solid sidewalls and the roof. Both architect and client dislike using EIFS, so the sidewalls are clad in hand-stained, ocher-colored cement-board panels. The panels have exposed metal fasteners and metal reveals modulating the large wall surface that suggest the underlying structural grid.

Details add layers of scale and texture within the bold steel frame. "We looked at the design as a kit-of-parts using off-the-shelf materials," says Miller. The cladding is a panelized system of garage doors, cement board, aluminum storefront, and metal siding at the roof. Each floor contains two units that vary in size from 700 square feet to 1,600 square feet and are designed to combine into one unit with relative ease. The fourth and fifth floor units are double height along the window wall with open mezzanines for sleeping. Most are floor-through units for fire department access from the street (there is also a central exit stair), while allowing natural light at both ends as well as cross ventilation.

The two-story penthouse units have private upper and lower outdoor terraces connected by metal spiral staircases that distinguish the project's roofline. In a city where rooftops are underutilized, these offer panoramic views of downtown, Puget Sound, and the Olympics. Inside, the loft-style units have a raw industrial quality, with polished concrete floors, steel-plate baseboards, and steel-deck ceilings. For maximum flex-

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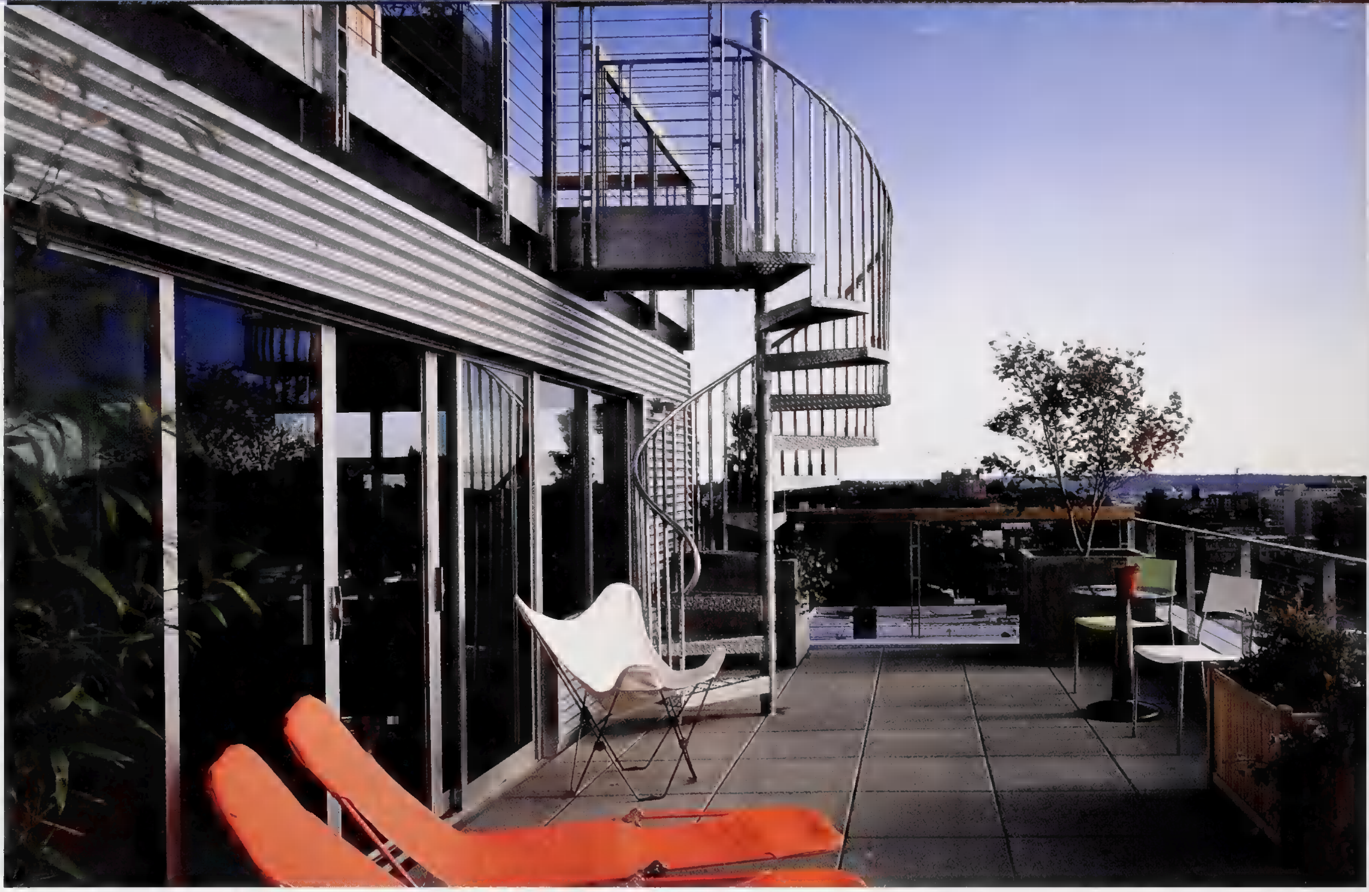

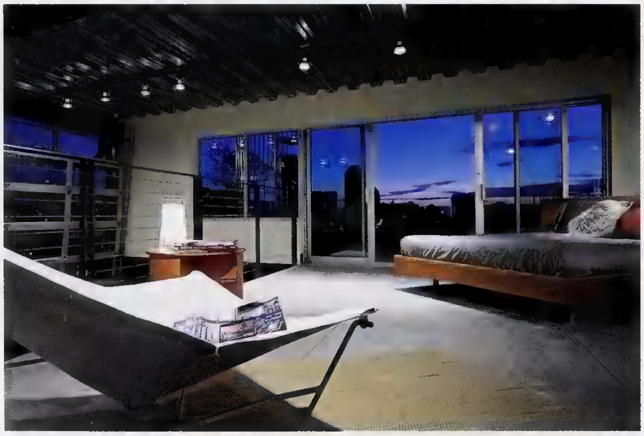

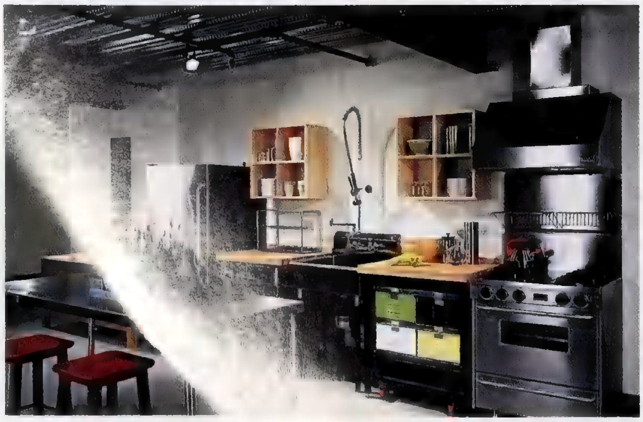

Two-story penthouse units have private upper and lower outdoor terraces that offer panoramic views (above). The fourth and fifth floor units are double height along the window wall, with open mezzanines for sleeping (middle). For maximum flexibility, the modular steel kitchen units can be wheeled into different configurations (bottom).

ibility, the modular steel kitchen units can be wheeled into different configurations. "As people's needs change over time, the space can be partitioned with movable freestanding furniture or fixed walls to reconfigure their work and/or living space," says Dunn.

The live/work lofts at 1310 East Union have a clarity and rigor unusual for Seattle's speculative housing market. The striking steel-framed glass box is an ode to Modernism, but, as Miller says, "It's not a Mies building; the structure has a certain muscular robustness." The detailing gives the project its fine-grained residential scale. While not intended as a prototype, it is an example of the type of urban-infill project Seattle needs to mend gaps in the urban fabric while addressing the shortage of high-quality in-city housing. ■

Sources

Exterior concrete: *Glacier Northwest*

Exterior cladding: *James Hardie Building Products*

Metal siding: *IMSA Building Products*

Roofing: *American Hydrotech*

Windows: *Pacific Aluminum*

Glazing: *Hartung Glass Industries*

Doors: *Pacific Aluminum; Interstate Door Sales; VT Industries; Overhead Door Corporation*

Paints and stains: *Sherwin Industries*

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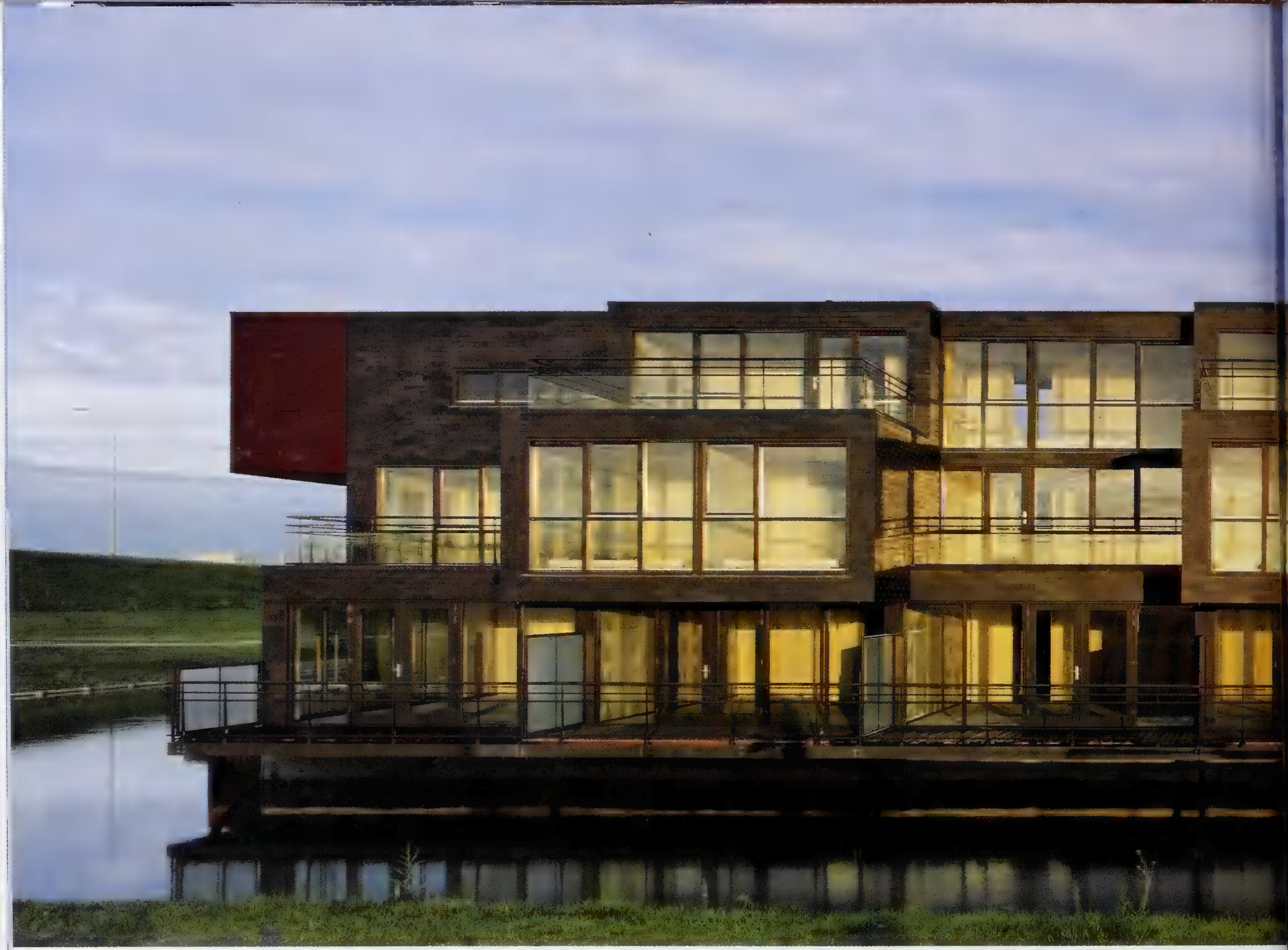
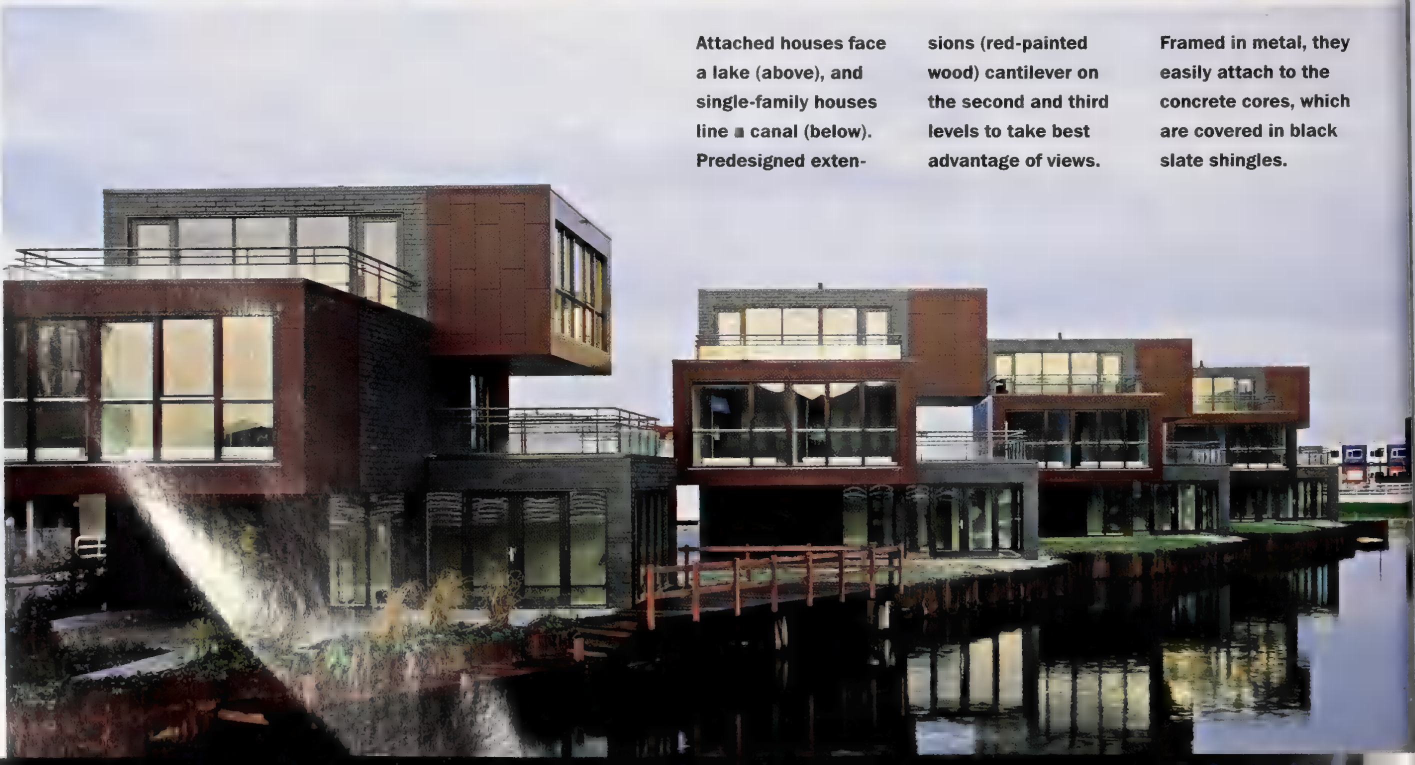
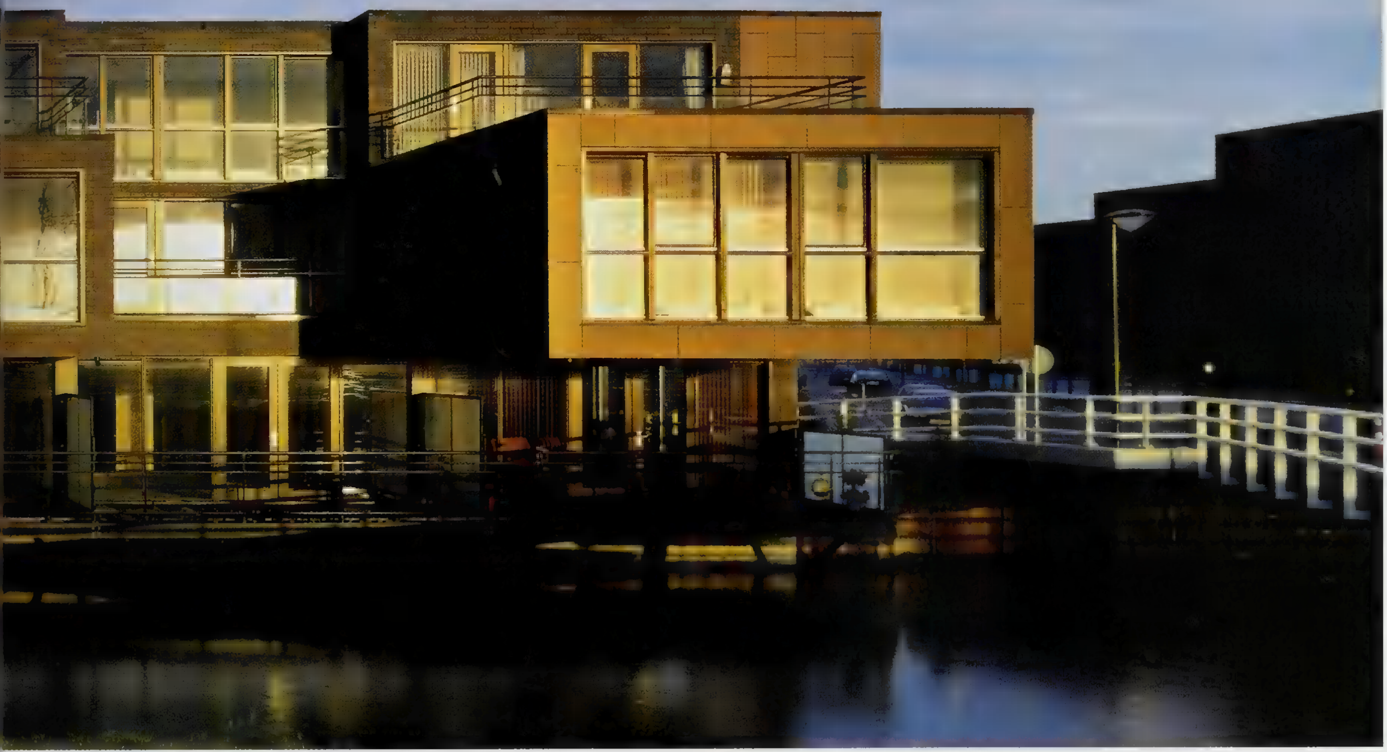


Attached houses face a lake (above), and single-family houses line a canal (below). Predesigned extensions (red-painted wood) cantilever on the second and third levels to take best advantage of views. Framed in metal, they easily attach to the concrete cores, which are covered in black slate shingles.



It may not be as "wild" as advertised, but new **Housing at Almere**, by UN Studios, makes a strong case for residential innovation

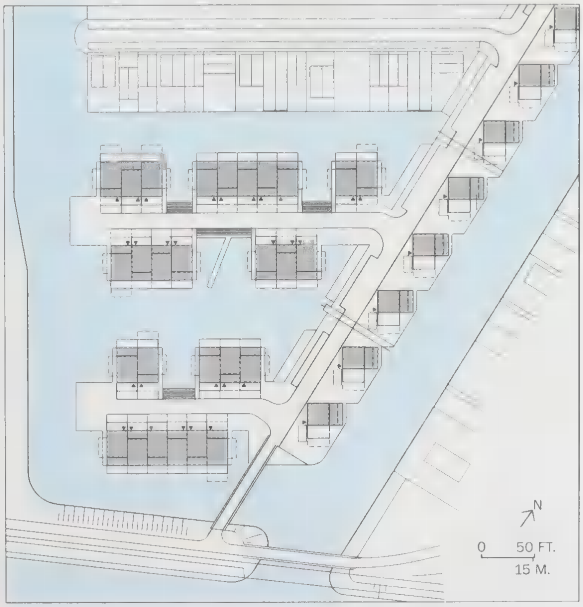


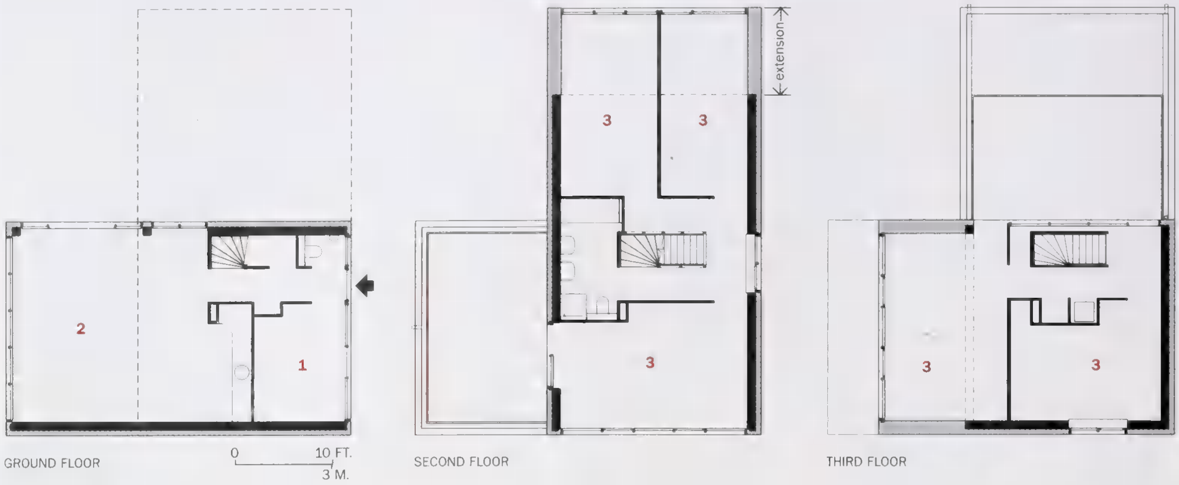
By James S. Russell, AIA

Americans offered an opportunity to "live wild" might envision a colony designed by Hells Angels or an extreme-sports subdivision. In Holland, where a new "experimental" district advertises "gewild wonen"—literally "wild living"—it means the radical notion of consumer choice.

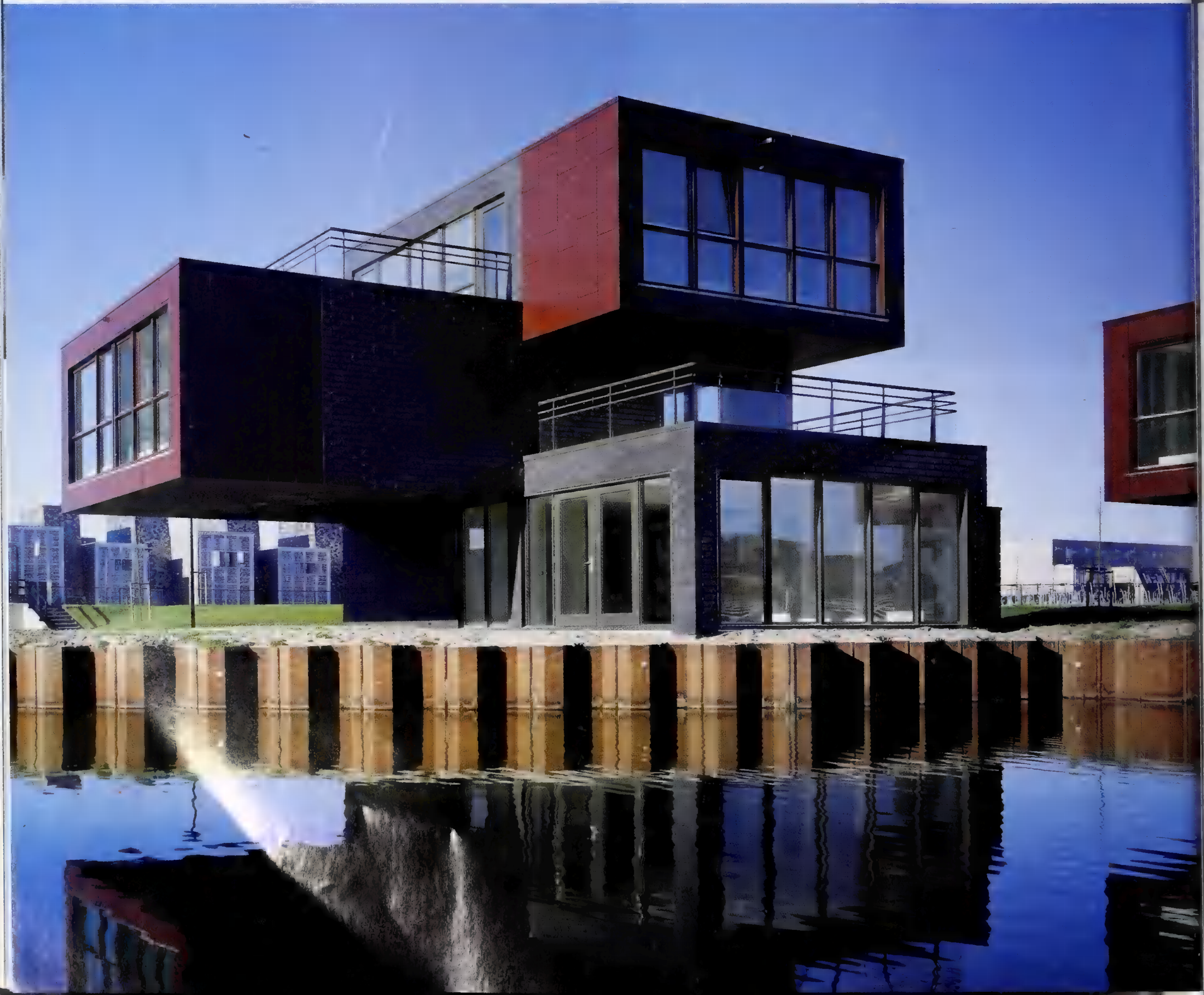
The development is an extension of Almere, a planned satellite city about 25 miles from Amsterdam that was built from scratch in the early 1970s according to the radical urban-dispersal planning theory of the early 20th century. Almere today bespeaks conventional suburban pride, however, where, amid its vast green spaces, carefully tended small gardens line its boxy terraced housing.

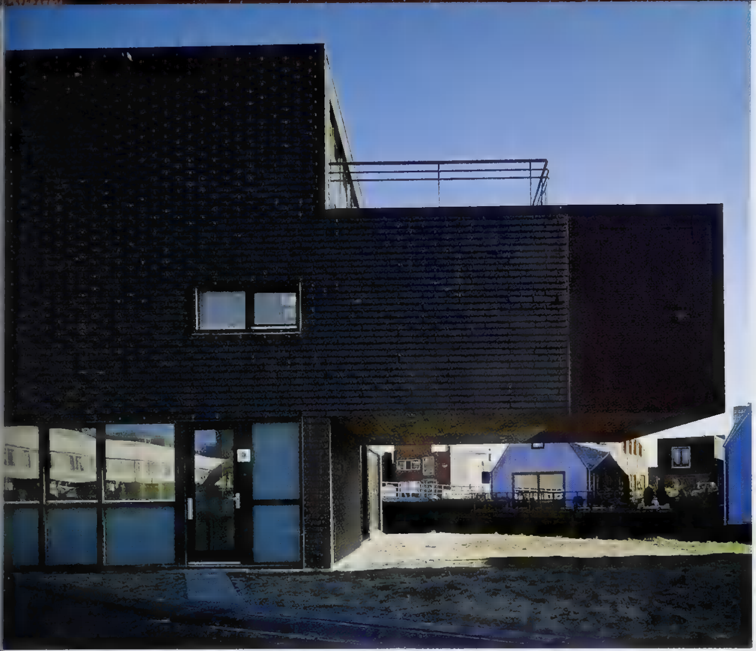
Increasing wealth and falling household size have spurred a demand for greater choice and more amenities in housing. Though the Netherlands' highly mechanized housing-production system, based on quick erection of modular forms cast in concrete, offers relatively low-cost, durable construction, it doesn't easily permit the variety of, say, American stud-wall construction. For this case, the district's planners asked 15 architect and developer teams to create more flexible housing types. More radically still—in Dutch terms—they asked the teams to consider buyer desires. The experiment responds to criticisms made most prominently by architect Carel Weeber that housing production in Holland is too tied to planners' and

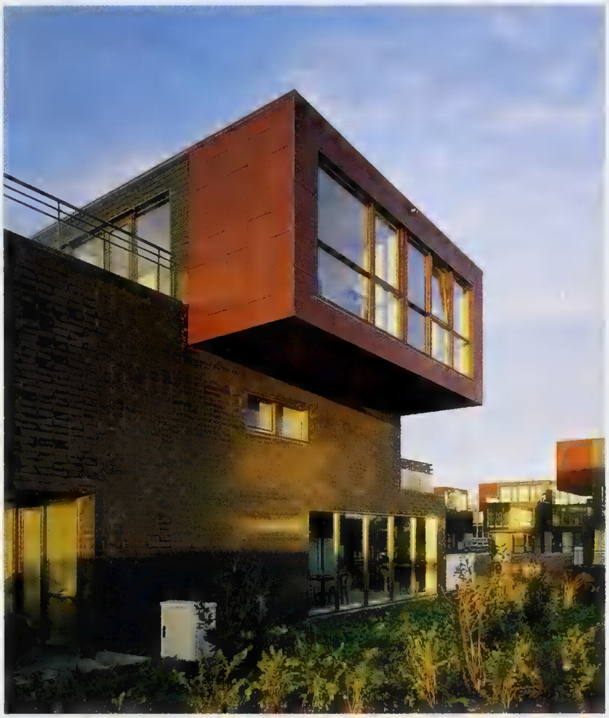




1. *Office/bedroom*
2. *Kitchen/living*
3. *Bedroom*







Although all the extensions are fully enclosed, some were originally designed as covered terraces. The architect anticipated that some spaces under the cantilevers might be partly glassed in for sunrooms, but such alterations are not yet permitted.

architects' notions of what people should like, and not concerned enough with the cozy corners and woodsy details that people really want.

Each team was allowed to propose its own way to achieve choice and flexibility. In this quarter, one finds Weeber's shed-roofed and bay-windowed models—which would not look out of place in a standard American subdivision—and architects trying on a wide range of tastes, from houseboat lookalikes cobbled from wooden canal-barge details to a high-tech evocation of a trailer park. In this melange, UN Studio's 48-unit development looks pitched to the buyer interested in platonic forms sculpturally arranged.

Although these houses have style aplenty, they intend an exploration deeper than mere appearance. Offered a line of narrow lots adjacent to a canal, UN Studio angled single-family homes of crossed-stacked pavilions (each about 20 feet by 32 feet). In attached houses, ranged along deeper sites that face a lake and inlet, the architect shifted parallel boxlike volumes for a rhythm of projections and recesses.

The notion of choice among the units is embodied (as in several of the district's other projects) in the ability to add or subtract predesigned extensions, each of which could be "interpreted" by the buyer for different uses. This idea encountered a characteristic Dutch snag early on. "There was a little difficulty because of the regulations," explained Boudewijn Rosman, the project architect. "The building police wanted to know exactly where the extensions would be before they were built, so there was no real participation by the buyers."

As a result, the completed houses display more uniformity than intended, but the dramatic form-making offers an adaptable layout. Because they pinwheel out from a core containing stair and plumbing systems, the pavilions can be divided or undivided readily, says Rosman. Most rooms have light on at least two sides, especially appreciated in a country with a predominantly dreary climate. The roof space atop the shifted volumes becomes generous, upper-level terraces.

Visually, the interlocking volumes produce a dynamic streetscape, with views of the water framed like jigsaw-puzzle pieces for the passerby. "We didn't want to make a wall of the houses," says Rosman. Even with the inevitable auto parked under one of the cantilevers, the design frees a fair amount of space at ground level on the tiny lots.

The single-family houses in the development have not yet sold well, which Rosman attributes to a slowing housing market and some discomfort with the assertiveness of the style. Brands Stassen, an Almere city planner, said buyers have chosen smaller houses at correspondingly lower prices in surrounding areas. Indeed, UN Studio's smaller, attached houses have done better. Rosman also wondered if the space devoted to the combination of kitchen, dining, and living area on the ground floor is too small compared to the rest of the house.

How would such a project fare in America? Even though builders tout extensive market research, the merchant-builder house of today seems more uniform than ever, down to the brick-faced entrance arch that festoons the French Provincial in Dallas or the neo-Mediterranean in New Jersey.

Although "experimental" and "housing" remain mutually exclusive terms in America, the lack of innovation is not successfully creating American models that work well at high density, built of materials more durable or environmentally sustainable than vinyl siding. The Dutch are arguably as concerned with comfort and resale value as Americans, but they're open-minded about innovation—even as it inevitably implies that mistakes will be made. There's a lesson for America at Almere. ■

Project: *Housing at Almere, 48 Family Houses*

Location: *Almere, Eilandenrijk, Holland*

Architect: *UN Studio—Ben van Berkel, principal; Boudewijn Rosman, project architect; Henri Snel, Gianni Cito, Alex Jung, Katrin Meyer, Aad Krom, Andreas Bogenschütz, Yuri Werner, KSK Tamura, Jasper Jägers, Martin Kuitert, team*

Owner: *Visser Bouwmaatschappij, Dhr. Drs G.J. Visser*

Engineer: *Ingenieursgroep van Rossum*

General contractor: *Bouwbedrijf Visser en Bunschoten*

Consultants: *TKA, Ontwerpbureau Teun Koolhaas Associates (landscape)*

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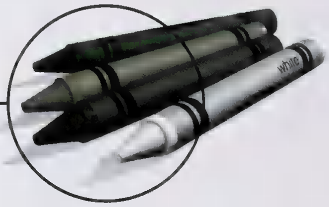

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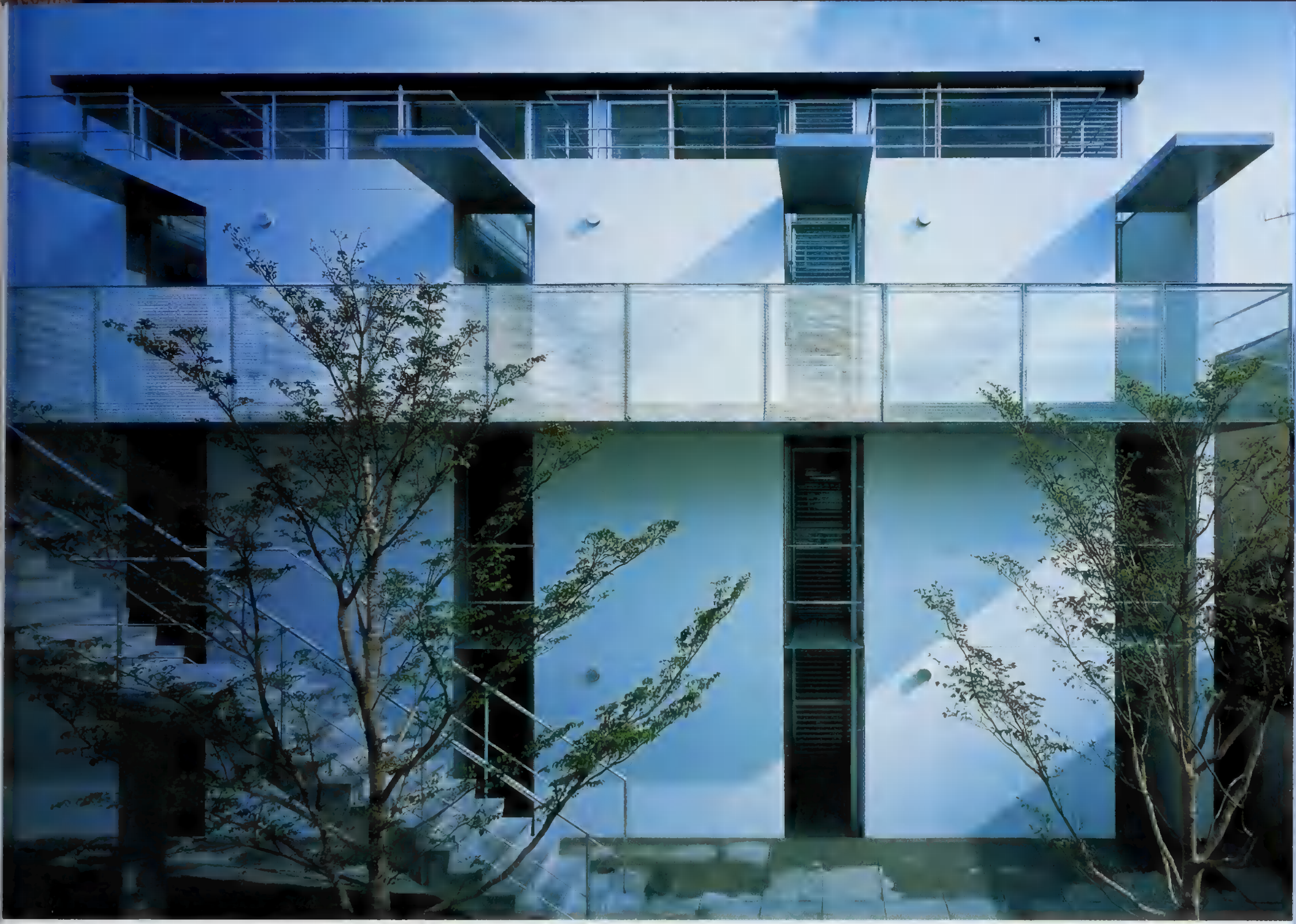


Chiba Manabu Architects' **Split** reiterates the dialogue between built form and vacant space so unique to Tokyo

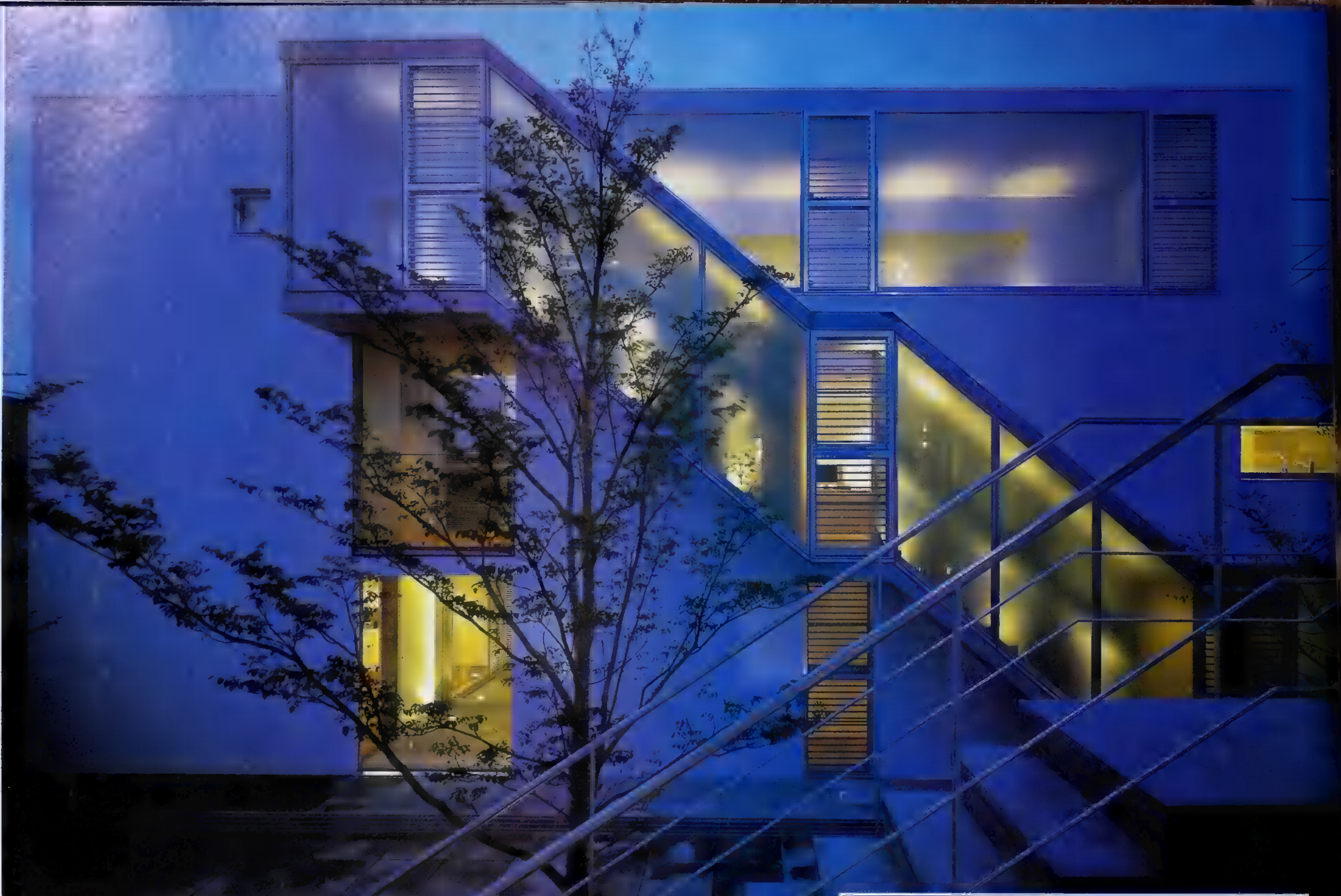
By Naomi Pollock, AIA

In Tokyo, where buildable property is scarce and expensive, most architects would happily use any available land to maximize their buildings. But to Manabu Chiba that's the tail wagging the dog. In Chiba's hands, architecture is a tool for forging connections between the glitches, gaps, and cul-de-sacs that create the network of vacant spaces responsible for Tokyo's unique urban fabric. So at the outset of designing Split, an eight-unit rental apartment building and landlord's house, top priority for Chiba and his firm, Chiba Manabu Architects, was not just the building itself but where to put it.

Faced with a generous site in central Tokyo previously occupied by a wooden house and garden owned by the client's family, Chiba first considered how to use his project to connect the surrounding residential neighborhood's vacant spaces. His solution was to divide the program into two blocky volumes, one for the owner and one for the tenants, and

Naomi Pollock, AIA, is RECORD's Japan-based contributing editor.

Project: *Split*
Location: *Tokyo*
Owner: *Yasushi Okutani*
Architect: *Chiba Manabu Architects*
Structural engineer: *Umezawa*
Mechanical and electrical engineer: *Kankyo Engineering*
General contractor: *Satohide Corporation*



The program comprises two blocky volumes, one for the owner (above) and one for the tenants (prior page), linked together with a courtyard (right and below). To Manabu Chiba, the dialogue between solid and void—built form and vacant space—defines Tokyo's unique character.

link them together with a 23-foot-wide courtyard that also creates a visual relationship with the dead-end street opposite, narrow slotted side yards on each end, and a garden belonging to an adjacent house at the rear.

The apartment component consists of two groups of four duplex, steel-and-reinforced-concrete apartments stacked on top of each other. The form of the apartment block was inspired by the wooden *mokuchin* apartments that proliferated in Tokyo after World War II, when there was an urgent need to throw up housing as quickly as possible. Each of the 500-square-foot apartments is entered from an exterior, single-loaded corridor on the first or third floor, the latter accessed by an exposed metal stair. "Though *mokuchin* have a bad image, I liked their casual feel," explains Chiba.

While two apartments at one end of the block each have an extra room, the other units consist of a stair and two floor plates. "I thought that each unit needed two kinds of space: one for movement and one for stationary activity," explains Chiba. Both levels consist of a single, multipurpose space, but one also contains the kitchen and the other the bathroom. Chiba left it up to the tenants to determine how to use the space.

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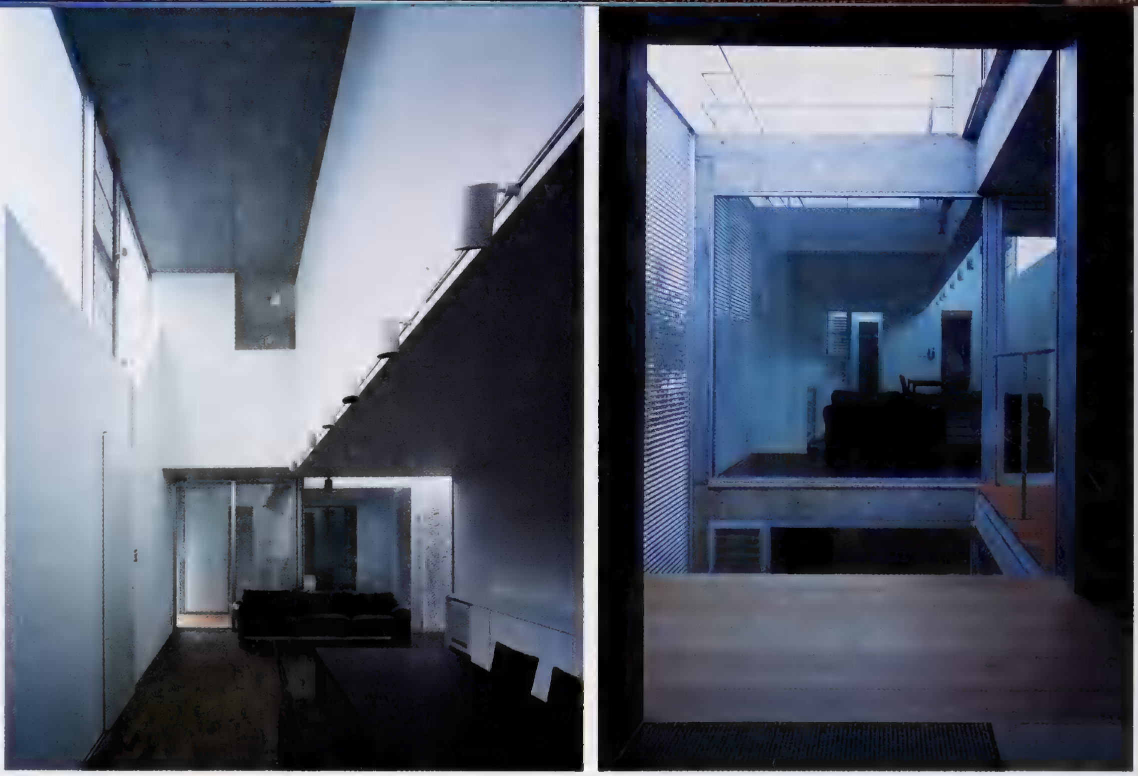
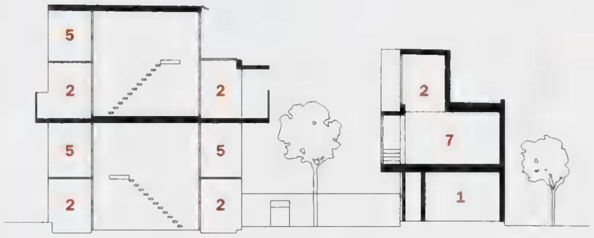


Both levels of the apartment units (shown here) consist of a single, multipurpose space, but one level also contains the kitchen, and the other the bathroom. Chiba left it up to the tenants to determine how to use the space.



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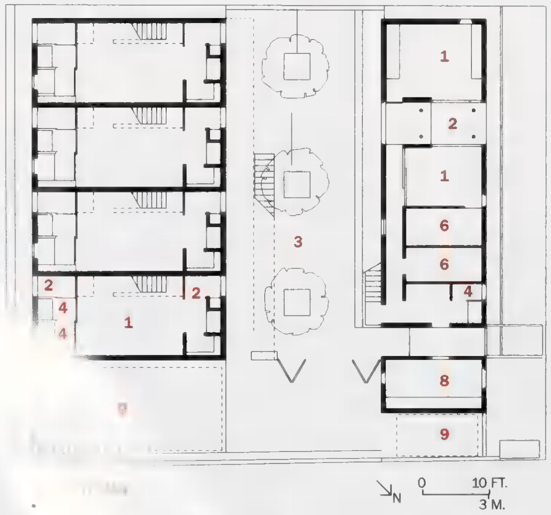

1. *Bedrooms*
2. *Terrace/porch*
3. *Courtyard*
4. *Bathroom/washroom*
5. *Balcony*
6. *Closet/storage*
7. *Living room/ dining room*
8. *Study*
9. *Parking*

Because sleeping, living, and working all require a modicum of privacy, windows and direct outside exposure were kept to a minimum. Instead, daylight filters in through the glass walls at either end of the circulation zone, where there was no need for privacy since people go up and down stairs quickly. The ideal spot to open up to the outside world, these stairs double as a visual conduit linking the central courtyard and the side yards.

A paved area dotted with trees and bicycle parking, the courtyard separates tenants and landlord. Echoing the face of the apartment building, an enclosed stair climbs up the side of the owner's house feeding three floor plates as it ascends. As in the apartments, Chiba did not assign functions to the individual floors, yet the character of each one is slightly different. While the second floor, an expansive room with the kitchen at one end, is the most public, the other two levels are more private, especially the third floor, where a luxurious glassed-in bathroom opens onto a stunning city view. "The client likes views and baths, so I decided to put them together," says Chiba. On the ground floor, where bedrooms are concentrated, a small garden and terrace act as a buffer between the main house and a tatami-floored room in one direction, and connect the courtyard and side yards in the other.

Instead of melding into unified street walls, Tokyo's buildings are largely separated—each one a link in the visual chain of open spaces that wends its way through the metropolis. To architect Manabu Chiba, the dialogue between solid and void—built form and vacant space—has always defined the city's unique character. ■

Sources

Roofing: *Tajima*

Windows, glass, skylights, doors: *Shin Nikkei*

Chairs, tables: *Cassina Inter-Décor Japan*

Kitchen furniture: *Monte*

Lighting: *Koizumi Sangyo; Yamada Shomei Lighting Company; Yamagiwa; Erco Toto*

Hardware: *Agaho (West Corporation); Miwa Lock Company*

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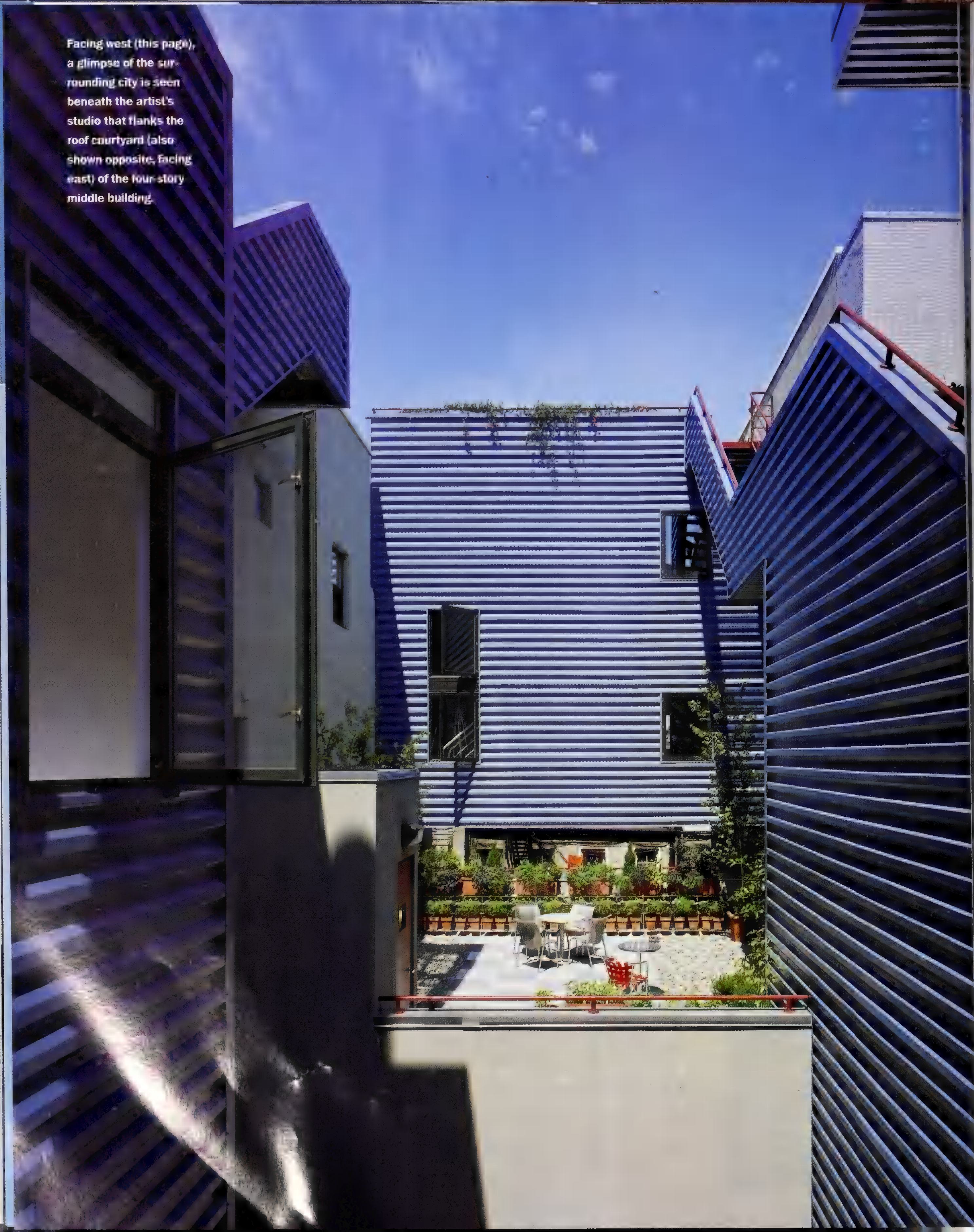
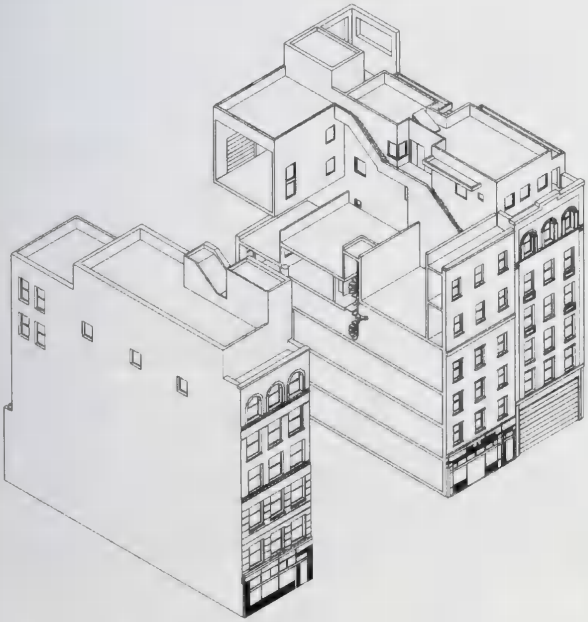


Facing west (this page), a glimpse of the surrounding city is seen beneath the artist's studio that flanks the roof courtyard (also shown opposite, facing east) of the four-story middle building.

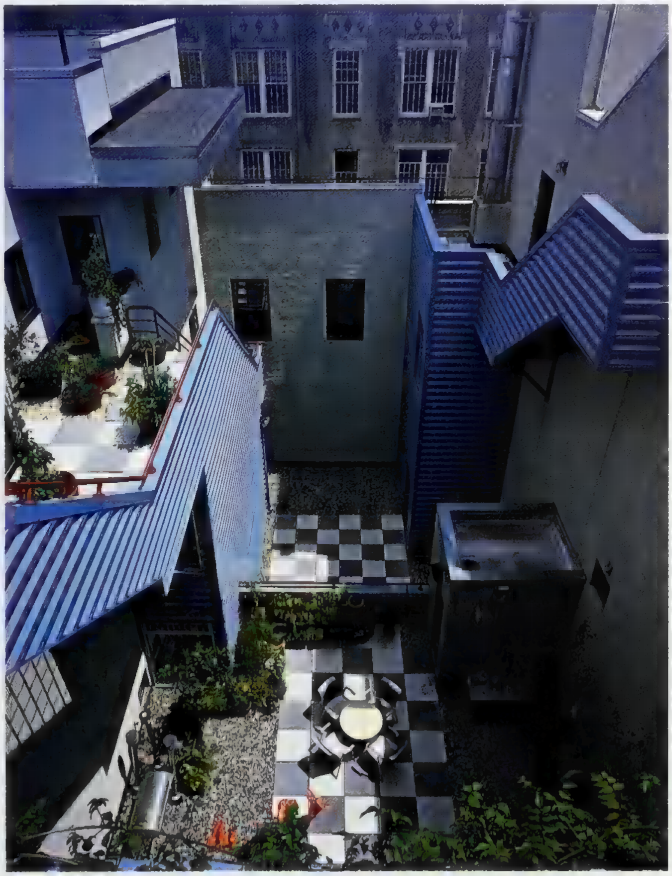
Le Corbusier's legacy lingers in Jon Michael Schwarting's loft renovations for the **Davis and Warshow Building**



By Suzanne Stephens

Who would have known that Jon Michael Schwarting, an architect trained in Corbusian principles at Cornell University in the 1960s, would one day apply them to drab tenement buildings on New York City's Lower East Side? You could call it Villa Savoie crosses Delancey. After Cornell, Schwarting, who has had offices in New York and Long Island, got to know Alan Finkel, an artist whose family owned three buildings, 71–75 Ludlow Street, devoted to its plumbing-supply business, Davis Warshow. The two end buildings had been erected around 1900; the middle one, a Federal row house dating to the Civil War, had been a stable for the north one until Davis Warshow took the group over in the 1920s. In 1998, Finkel and his family decided to convert the ensemble, used primarily as a supply house where plumbing inventory was stored, into rental living lofts. Finkel was already living in one building, with his studio in another. He saw the neighborhood was heating up as a residential area, and the family concluded that storage could be pushed elsewhere. So the artist called upon Schwarting to help out with a renovation scheme, in which 13,000 square feet would remain for plumbing supplies on the street level, and 13 residential units, totaling 41,000 square feet, would be inserted into the floors above. While all the units have an open loft plan, three are duplexes, and one of these was specifically designed for the artist-client.

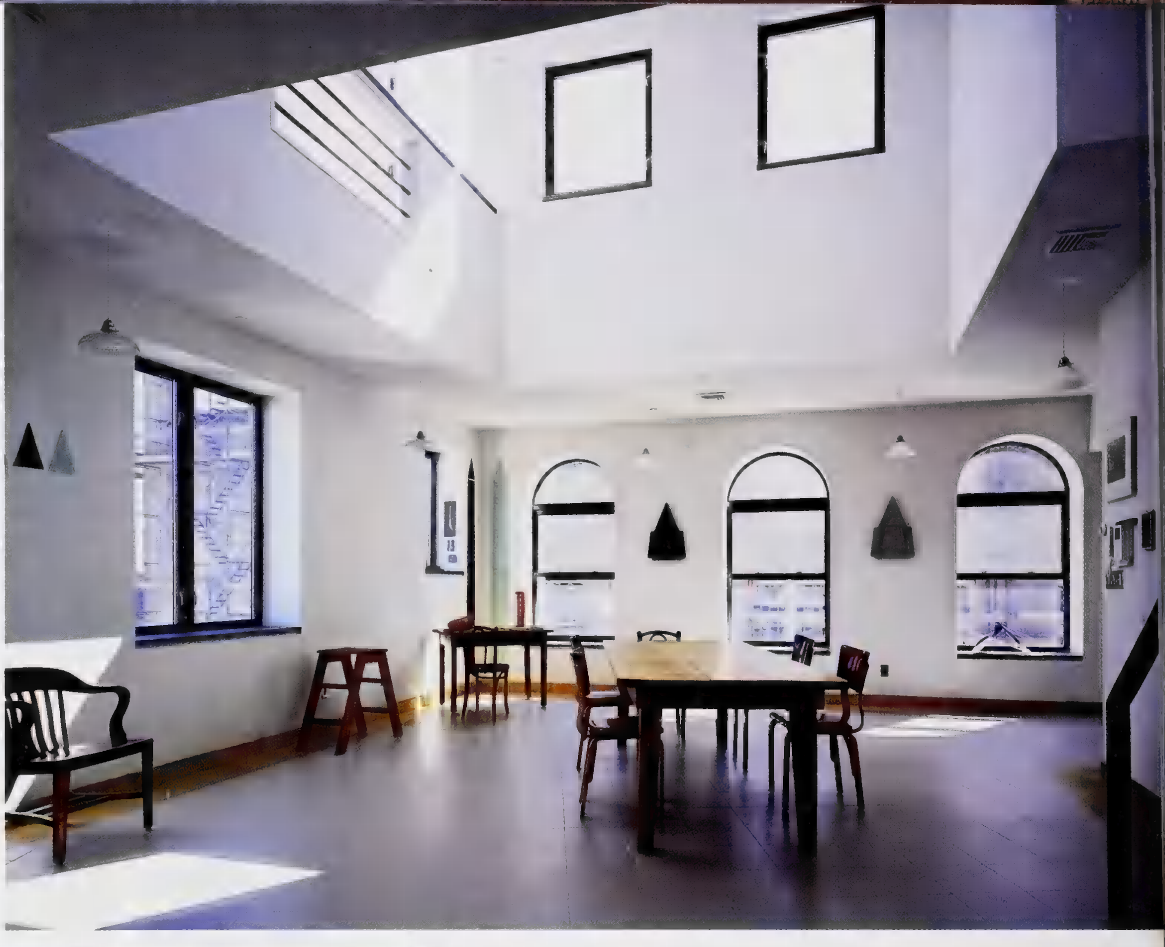
Since the six-story end buildings were already connected by two stacked, bridgelike corridors extending behind the street facade along the top of the middle building (see axonometric section), the ensemble could be tied into an integrated complex of indoor and outdoor living areas. In order to create the duplex at the top of the buildings, Schwarting took advantage of a zoning regulation that permits mezzanines to be placed in one third of an existing space, and then raised the roofs of the two end buildings by 8 feet, and the middle one by 3 feet. The living rooms of the mezzanine lofts now soar to heights of 16 to 20 feet, while the typical 1,600- to 1,800-square-foot lofts without mezzanines have ceilings that are 9 to 11 feet high.



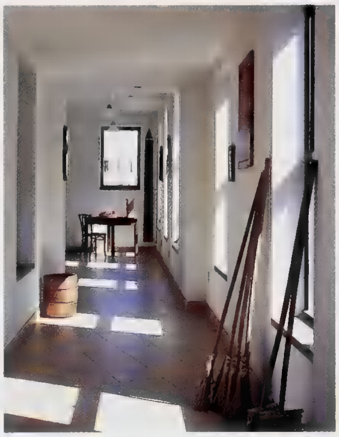
Of the duplex units, Finkel's is the most elaborate in its disposition of spaces. In the spirit of Le Corbusier's *promenade architecturale*, Schwarting created for the artist a directed movement through a sequence of spaces that begins at the entrance elevator in the south building, then progresses across the sixth-floor bridge/corridor of the middle building, into Finkel's loft at the north end. The mezzanine level continues the

---

Project: *Davis and Warshow Building*
Location: *New York City*
Owner: *Dorose Holding Corporation*
Architect: *Jon Michael Schwarting Architect (now Campani and Schwarting Architects)—Jon Michael Schwarting, principal; Yumi Yoshino, Michael Rizzo, project team*
Engineers: *Severud Associates (structural); Smalley Design (mechanical and electrical)*



Inside a top-floor living loft (right), a stair leads to the mezzanine (below left). Jon Michael Schwarting varied the sequence of spaces by having narrow passages edge the rooms (below right), by creating internal and external window openings that frame views, and also by making it necessary to go outside to get to various interior spaces.

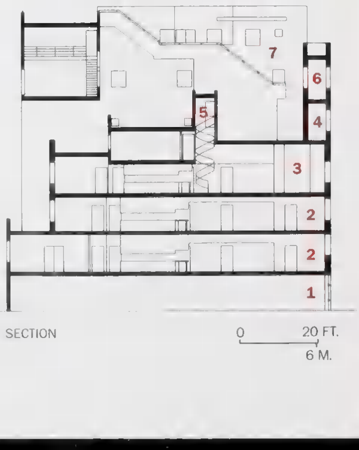


sequence with a series of rooftop spaces, where rooms are both enclosed and open to the sky. Finally, one arrives at a 24-foot cube placed along the western edge of the middle building, used for Finkel's studio. The 625-square-foot space also comes with a 200-square-foot mezzanine, a volume evocative in its proportions of Le Corbusier's Esprit Nouveau Pavilion of 1925.

In addition, Schwarting turned the roof of the middle building into a courtyard, with various levels serving the fourth-floor loft and two fifth-floor units. (A communal outdoor space for the remaining loft units is placed at the front end of the south building.) The stair bulkheads, elevator housings, railings, vent and drain pipes, and metal chimneys of the main courtyard lend it the sculptural presence of Le Corbusier's famous roof garden of 1931 for Charles de Beistegui in Paris, with its carpet of green grass, outdoor fireplace, and Surrealistic air. Here, however, the functional objects and corrugated steel panels imbue the courtyard with the dramatically industrial-urban character of New York.

The renovation attests to the rich legacy of the early Modern pioneer. Schwarting's reinterpretation of Le Corbusier's sequence of spaces, proportions, volumes, and architectural elements treated as sculptural objects have brought vitality to an urban enclave and to a trio of structures otherwise lacking in architectural distinction. ■

1. [illegible]
2. *Ty*[illegible]
3. *Duplex,* [illegible]
4. *Bridge connection*
5. *Stair to fourth-floor loft*
6. *Bridge connection*
7. *Stair* [illegible]



Sources

Steel structural system: *Marino*

Finish on existing masonry: *Thoro Coat and Thoro Seal*

Metal curtain wall: *Atlas*

Aluminum windows (double-hung and casement): *Universal*

Corrugated-metal ceilings: *Alpro*

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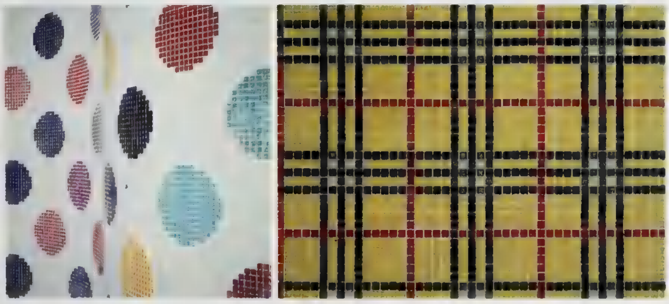
▼ Nesting, but not resting

Heltzer offers the Sedona nesting tables for indoor and outdoor use, set on locking casters for easy mobility. The collection includes a 35" high, counter-level table, a 29" high dining table, and a pair of 23" high occasional tables. Tops are of slatted teak, limestone, or granite, and frames are of stainless steel. Sizes can be customized, and casters are optional. 773/509-0005. Heltzer, Chicago. **CIRCLE 200**

▼ Mosaic couture

At this year's ICFF, Bisazza showcased several inventive compositions that illustrated the potential of mosaic. The Pois group offers a three-color polka-dot look or a confettilike, multicolored look produced from Bisazza's new Smalto tiles. Tartan Classic, inspired by Burberry plaid, includes shades of "interlaced" tan, red, black, and gray. 305/597-4099. Bisazza North America, Miami. **CIRCLE 201**



► Flooring first

Rather than bringing in rough stone slabs with the inherent waste of using only a portion of them, Ann Sacks has chosen formats that are manufactured by their quarries. The Princess Yellow slab flooring pictured here has been cut to fit the dimensions of the room shown. The slabs of approximately 3' x 5' were laid in the perimeter of the room and the interior walls were then installed over the flooring. 503/281-7751. Ann Sacks, Portland. **CIRCLE 203**

▲ Grass cabinets

Recognizing the worldwide appeal of bamboo, bulthaup has added the renewable, lightweight reed grass to its collection of veneers. Fine strips of the bamboo veneer, accentuated by distinctive nodes, are produced by hand for bulthaup by skilled craftsmen. The company uses natural gray color pigments and a special UV varnish that protects the veneer from discoloration and preserves the natural feel of the material. 212/966-7183. bulthaup Corporation, New York City. **CIRCLE 202**

◄ River views

Harmon worked closely with Turner Construction to achieve a 26-story solid window wall of glass for Miranova Towers, a residential tower offering one of the best views in Columbus, Ohio. Designed by Miami-based Arquitectonica International, the residential tower's northern facade reflects the river in its blue-green tinted glass, while the southern wall includes a center column of recessed windows. 763-287-4900. Harmon, Golden Valley, Minn. **CIRCLE 204**

► French teak

THG USA, the American importer of luxury and high-end bath products from the House of Tetard, Haudiquez and Grisoni (THG) in France, introduces faucets, bath fixtures and accessories, and luxury bathtubs to the U.S. Inspired by the traditional Japanese bath, the Yoko tub (shown) can be equipped with an optional teak rim, an interior teak seat, and a matching teak step. The Heritage tub features soft, rounded lines, and like the Yoko tub is constructed of resin. Both tubs are available in an extensive choice of color finishes. 954/425-8225. THG USA, Coconut Creek, Fla. **CIRCLE 205**

Residential Products

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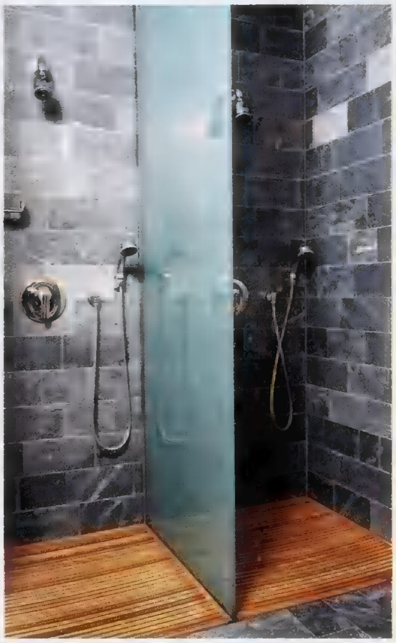
► Soapy tiles



The Finnish-based Tulikivi Group is the largest soapstone-processing company and manufacturer of soapstone fireplaces in the world. Tulikivi's soapstone tiles are also well suited for both floor and wall installation in bath and kitchen environments, and require minimum care. Other applications include exterior cladding, facades, floors, terraces and stairs, interior stairs, landscaping, and fountain structures. Tulikivi offers semifinished materials such as cut-to-size slabs and monumental masonry products. 800/843-3473. Tulikivi U.S., New York City. **CIRCLE 206**

◄ Finale touches

Finale is a new brand of decorative tile trims and accent pieces. The line includes Midori, a blend of brushed metal, slate, and colored glass; Borders medieval-look mosaics; Pulsacions hewn-stone-look accents; Metallic Dreams metallic-glazed-ceramic accents; Matterhorn travertine and marble stone accents; and Atmosphere stone medallion accents (shown). 877/356-7462. Florim USA, Clarksville, Tenn. **CIRCLE 207**

► Central vac system

To create lightweight, powerful cleaning, better air quality, and less noise, the Beam Central Vacuum's power unit is typically located in the basement or garage and connected to convenient inlets throughout the home via vacuum tubing. Users plug the hose into an inlet and turn the system on with a switch on the hose handle. Particles are completely removed from living areas and collected in the power unit's dirt receptacle. Most homes require only three inlets to reach every area with the hose and attachments. 800/947-2326. Beam Industries, Webster City, Iowa. **CIRCLE 208**

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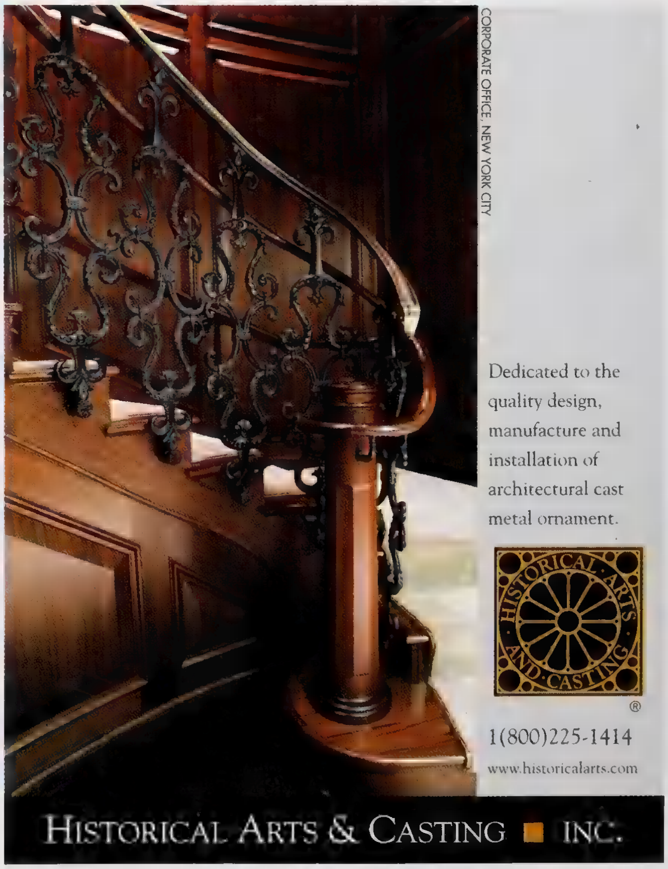
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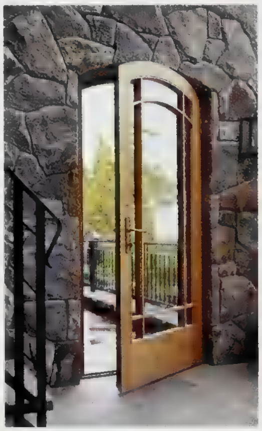
mas Peter Dolle Associates, architect, Sam Gray Photography



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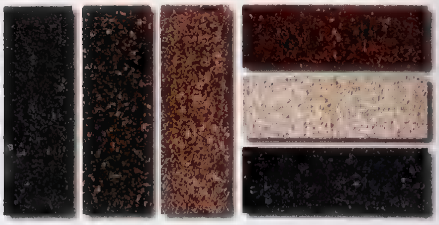
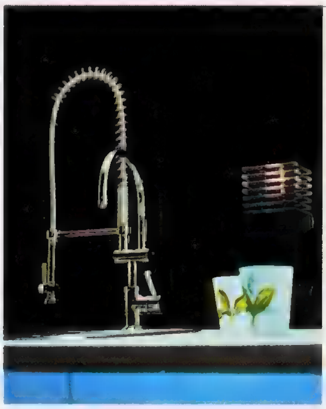
▼ It refrigerates, cooks, and keeps dinner warm

Whirlpool has introduced the Polara refrigerated range, the world's first range with refrigeration capabilities. Polara, a standard-size range that does not require any customized hookup or installation, is controlled by a timing capability, enabling consumers to prepare meals up to a day ahead of planned mealtimes. The timer can be programmed to perform the steps of meal preparation over a 24-hour period. Program options include initial cooling start and stop times and baking temperature start and stop times. The range is also programmed to kick into an automatic low-temperature warming time for up to an hour and offers an additional cooling stage. 800/253-1301. Whirlpool, Benton Harbor, Mich. **CIRCLE 209**

► Quartz surfaces



Six of the seven new colors from Silestone natural quartz surfaces will make up a new series named Tropical Forest: Ivory Coast, Ebony Pearl, Mahogany, Rain Forest, Brazilian Brown, and Aguazul. Kona Beige, a warm earth, tri-shade beige, is the seventh color. Cosentino, the Spanish company that produces Silestone, uses a three-color mixing process rather than the two-color mixing process used by its competitors. 281/494-7277. Cosentino U.S.A., Stafford, Texas. **CIRCLE 210**



◄ Professional-style spray

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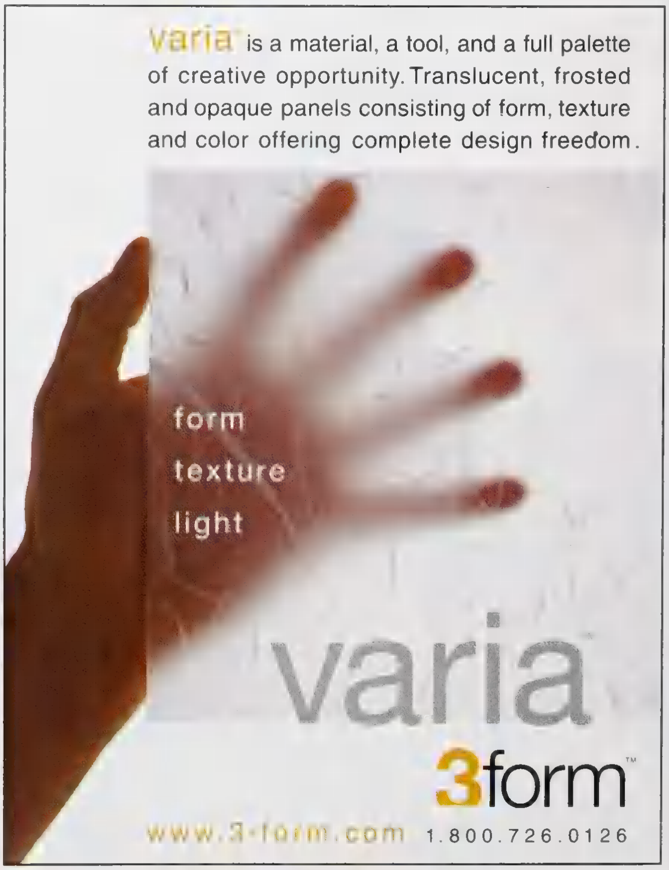

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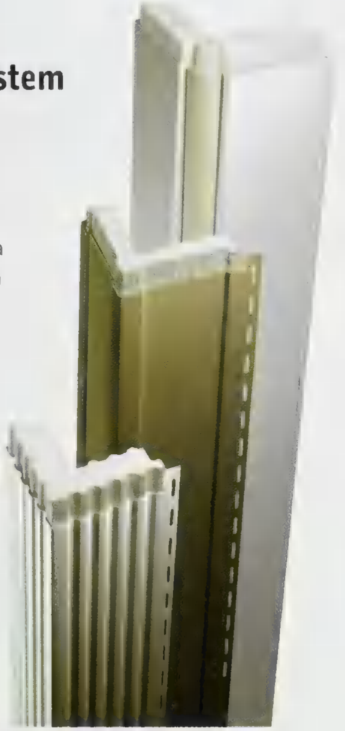
Realistically patterned vinyl siding; architecturally inspired corner system

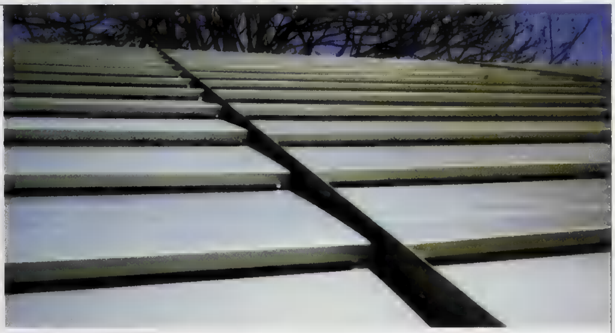
CertainTeed Vinyl Siding has enhanced the company's product line with several new offerings, including a new style and four new colors in the Cedar Impressions line and the new SuperCorners system.

Random Hand-Split Shakes are the newest shingle style in the Cedar Impressions family. The new style features the coarse texture and deep shadow lines found in authentic hand-split cedar shakes. The 10' panels are made with patented TrueTexture technology and designed with a random edge pattern for a realistic look for the whole house, or for accents. New colors for Cedar Impressions include Barn Red, Buckskin, Heritage Cream, and Prairie Sand, bringing the total choice to 12 colors. The siding is available in 7" Perfection and 6¼" Half-Round Shingles. In addition to the new style and colors, CertainTeed has added a new Perfection Mitered Cornerpost for a matching look on Cedar Impressions Perfection Shingle jobs.

New Hand-Split Shake (above). The three styles of SuperCorners (right).

CertainTeed's 2002 product line also introduces SuperCorners, a new product that provides a custom look and eliminates the need for multicomponent corner systems. SuperCorners comes in three architecturally inspired styles, including Beaded (with an optional snap-on insert for color contrast), Traditional, or Fluted. SuperCorners are available in 20' lengths for quick and seamless installations and feature a rigid, solid-core foam backing for added durability and ease of handling. 800/233-8990. CertainTeed Corporation, Valley Forge, Pa. **CIRCLE 212**





Metal facade and roof component options

The Rheinzink metal facade system can be used for a variety of contemporary building envelopes. The company has utilized more than 10 different systems for modern facades and outer walls, such as corrugated and trapezoidal profiles, as well as reveal, chamfered, and horizontal panels. In addition, there are small and flat-lock tiles and designs in batten seam, angled standing seam, and various custom-made designs.

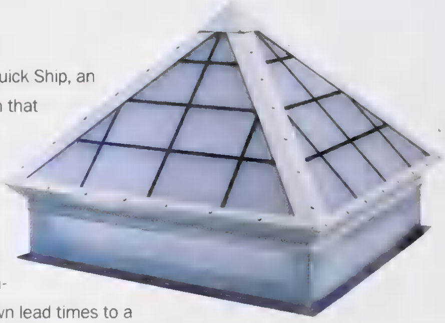
Rheinzink also offers roof components. With the new Quick Step Stepped Roof, Rheinzink can be installed quickly by using precise plug-in components based on standard prefabricated profiles. Quick Step profiles are available in a "preweathered" surface quality and are suited to roof pitches of 10 and 75 degrees. They are manufactured for specific projects according to dimensions; standard metal thickness is 22 gauge and standard lengths are approximately 79" or 118". For eaves, ridges, hips, and valleys, Rheinzink supplies system components, which are precisely coordinated in detail and available as standard parts. 604/291-8171. Rheinzink Canada, Burnaby, British Columbia. **CIRCLE 213**

One of Rheinzink's several metal facade systems (above left). The Quick Step Stepped Roof (above right).

Copper canopy for historic bandstand

To help renovate a stone bandstand in the historic town of Hico, Texas, Custom-Bilt Metals created a metal canopy from concave copper panels. The copper panels, which were installed over a concave octagon-shaped structural-steel framework using concealed fasteners, provide shelter while also fitting around an existing street pole. An expansion cap on top of the canopy allows for deflection of the streetlight pole. 800/826-7813. Custom-Bilt Metals, El Monte, Calif. **CIRCLE 214**

New Products



► Quicker skylights

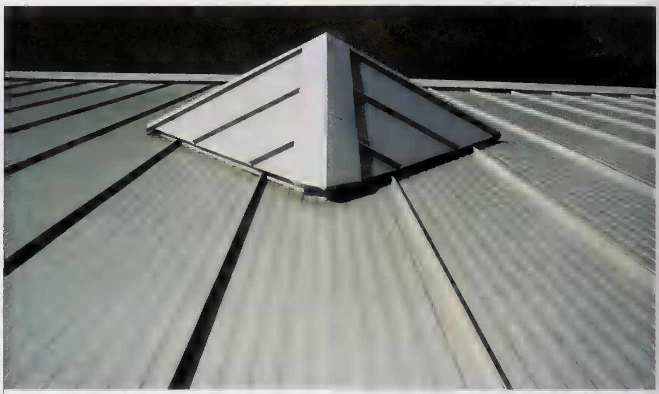
Major Industries introduces Quick Ship, an interactive Web-based system that can be used to speed up the process and lower the cost of ordering and receiving a pre-engineered skylight. All Quick Ship skylights feature Guardian 275 translucent panels, pre-engineered to cut down lead times to a maximum of six weeks for standard sizes and finishes. Architects can visit the company's Web site at www.majorskylights.com, choose the design parameters, and have a price within one business day. 888/SKYCOST. Major Industries, Wausau, Wis. **CIRCLE 215**

► Energy-efficient roof tiles

The Two-Piece Mission Tile from U.S. Tile is one of more than 20 of the company's roofing products that meet the stringent reflectivity requirements for participation in the EPA Energy Star partnership program. All U.S. Tile products carry a fadeproof guarantee and a class "A" fire-resistance rating. 909/737-0200. U.S. Tile, Corona, Calif. **CIRCLE 217**

▲ Shake siding

Featuring a deep, rustic grain that was patterned directly from real split cedar, new Portsmouth Shake and Half Rounds from Crane Performance Siding are made of durable injection-molded polypropylene. Combining a .1" thickness with reinforced nail slots and perimeter locks makes Portsmouth Shake strong enough to resist wind gusts up to 160 mph, or a category 5 hurricane. The Portsmouth Shake is available in six colors and comes in 48" lengths and a double 7" profile. The Half Rounds are available in Aspen White with a 35" long, double 6½" profile. 800/366-8472. Crane Performance Siding, Columbus, Ohio. **CIRCLE 219**



▲ Utility facelift

When the headquarters building of Beauregard Electric Cooperative in Deridder, Louisiana, needed a facelift, the retrofit solution was to put a pre-engineered building over the existing structure. The project utilized 28,000 square feet of Metl-Span polyurethane insulated roof panels finished in a Surrey Beige color. Leak protection was assured by the continuous panel running from ridge to eve. 972/221-6656. Metl-Span, Lewisville, Texas. **CIRCLE 216**

▲ Stained shake available

Sierra Premium Shake, a fiber-cement product manufactured by Nichiha USA, is now available both stained and primed. The new stained-shake offering includes mahogany, maple, redwood, and cedar and comes with a 12-year warranty. The ½" thick, 8" long shake will withstand winds exceeding 110 mph and is rot and termite resistant. 866/424-4421. Nichiha USA, Atlanta. **CIRCLE 218**

► Protecting the protection

Sealtight Vibraflex Bridge Deck Protection Course provides rugged protection for delicate deck waterproofing membranes. The multiple-ply, semirigid, asphaltic panel is designed to absorb both the dynamic and static loading on railway, mass-transit, airport, and other special projects. Vibraflex is ideal for both new and remedial waterproofing applications on concrete, wood, steel, and prestressed or precast-concrete structures. 847/214-2100. W.R. Meadows, Hampshire, Ill. **CIRCLE 220**

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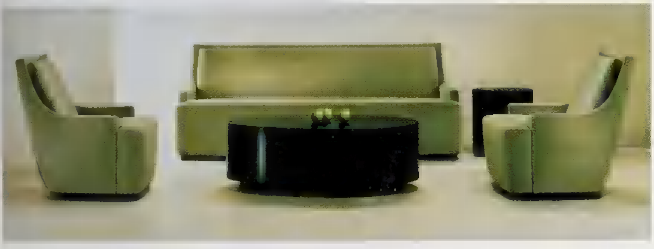
Product Briefs

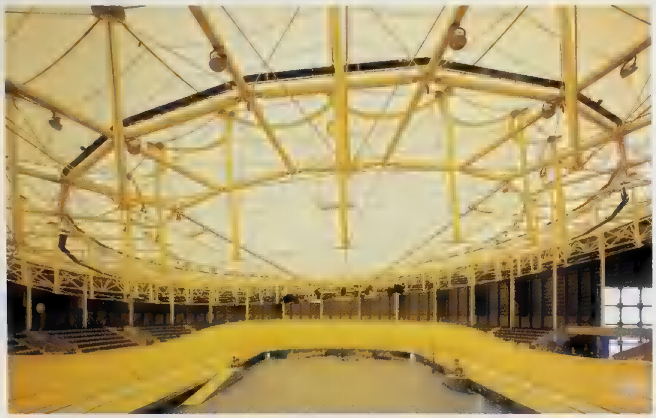
▼ Got the scoop

Barbara Barry's new Scoop Series collection for HBF consists of upholstered lounge chairs in two sizes, an ottoman, a sofa, and a love seat. Like many of Barry's designs, the Scoop Series contains references to the modern masters of the 1930s and 1940s. "These pieces are shaped like a cupped hand," says Barry, describing their streamlined form. Options for the chairs include a metal-swivel or a wooden-plinth base, with or without casters. 828/328-2064. HBF, Hickory, N.C. **CIRCLE 221**



► Healthier option

Available as a new or retrofittable option on Herman Miller's Aeron chair, PostureFit delivers support to the area of the lower back below the beltline, where the spine meets the pelvis. PostureFit was developed by a spinal-care and ergonomic-seating specialist, based on his work with the aerospace and motor-sport industries and was designed by the Aeron chair's original designers. 888/443-4357. Herman Miller, Zeeland, Mich. **CIRCLE 223**



▲ Inflatable velodrome

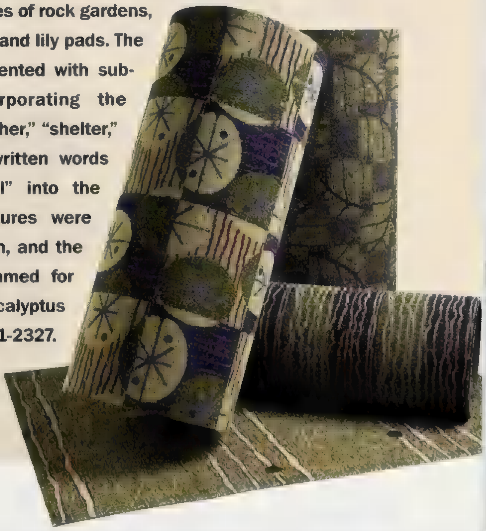
Created through the initiative of the International Cyclist Union, the Centre Mondial du Cyclisme in Aigle, Switzerland, opened its doors last May. Designed by Pierre et Pascal Grand and Tekhne Management, the center features a 5,000-square-meter double inflatable membrane held under tension by a pneumatic system. The interior of the velodrome is completely free of load-bearing points, optimizing the structure's use of space. 33/0474974133. Ferrari S.A., Cedex, France. **CIRCLE 224**

Product of the Month Soul

Milliken Carpet and the Omaha-based health-care firm HDR have teamed up to create a new carpet line aimed at the health-care market. The 6' loop pile collection, Soul, draws from nature and the philosophies of Zen, Feng Shui, and aromatherapy to promote a feeling of health and well-being.

The 25 designs are the first in a new series of carpets that Milliken has engineered for high-performance markets. Called Carpet for Extreme Conditions (cXc), the series features a new Antron Legacy fiber by Dupont, the new AlphaSan antimicrobial treatment from Milliken Chemical, and a new backing codeveloped with Dow Chemical.

Eastern and natural influences are prevalent throughout Soul's patterns, emerging in images of rock gardens, bamboo stalks and leaves, and lily pads. The design team also experimented with subliminal messages, incorporating the Chinese symbols for "together," "shelter," and "self" and the handwritten words "mind," "body," and "soul" into the designs. Background textures were inspired by gauze and linen, and the 10 color concepts are named for essential oils such as Eucalyptus and Ylang Ylang. 800/241-2327. Milliken Carpet, LaGrange, Ga. CIRCLE 222



▼ Architectural glazing award

Five projects were recognized by this year's Solutia Design Awards, a program that pays tribute to architects and designers who have used Solutia's architectural glazing products. The winners include The Garage, São Paulo, Brazil; Milwaukee Art Museum, Milwaukee; Cauldron, Olympic Winter Games, Salt Lake City; Christian La Croix Daikanyama (right), designed by Christian La Croix and architect Christophe Carpente, Caps Architects; and Flemington Racecourse (bottom), Melbourne, Australia, designed by The Buchan Group. 877/674-1233. Solutia, St. Louis. **CIRCLE 225**

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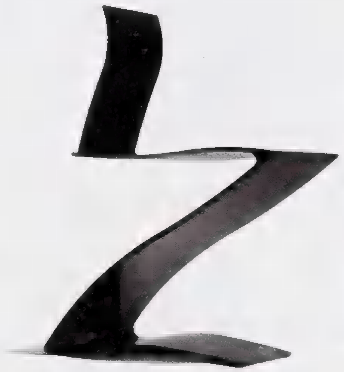
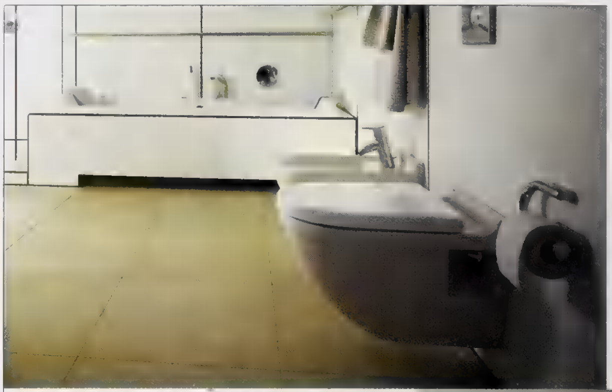
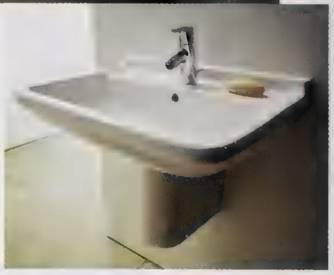
Product Briefs



▲ Carbon art
Last May, Italian-born designer Giovanni Pagnotta unveiled his first complete collection of furniture—a line of luxury sculptural furnishings made entirely of carbon fiber. The ultra-thin pieces include two chairs, two tables, a trash bin, a light, and a chaise longue. Prices range from $1,500–$8,000. 914/935-1490. Giovanni Pagnotta, Port Chester, N.Y. **CIRCLE 226**

▼ Paper partitions
Allsteel has created a new collection of surfaces for its Terrace and Marbles furniture lines, including the Mulberry Paper style, shown here. Made from actual mulberry fiber, the paper is sifted through handmade screens, rinsed in natural streams, and then suspended between recyclable resin sheets. 563/262-4800. Allsteel, Muscatine, Iowa. **CIRCLE 227**





▲ Starck and square
A Minimalist square shape is the hallmark of all the furnishings and ceramic products in the Starck 3 bathroom collection. Suitable for residential, commercial, and institutional use, including hospitals, offices, railway stations, and airports, the collection includes a variety of washbasins, toilets, bidets, and urinals. Additionally, Duravit is producing tubs and shower trays for the collection. As the first designer collection for the contract sector, the Starck range of shower trays and baths opens up new design options for the most private areas of public buildings. 888/DURAVIT. Duravit, Duluth, Ga. **CIRCLE 228**

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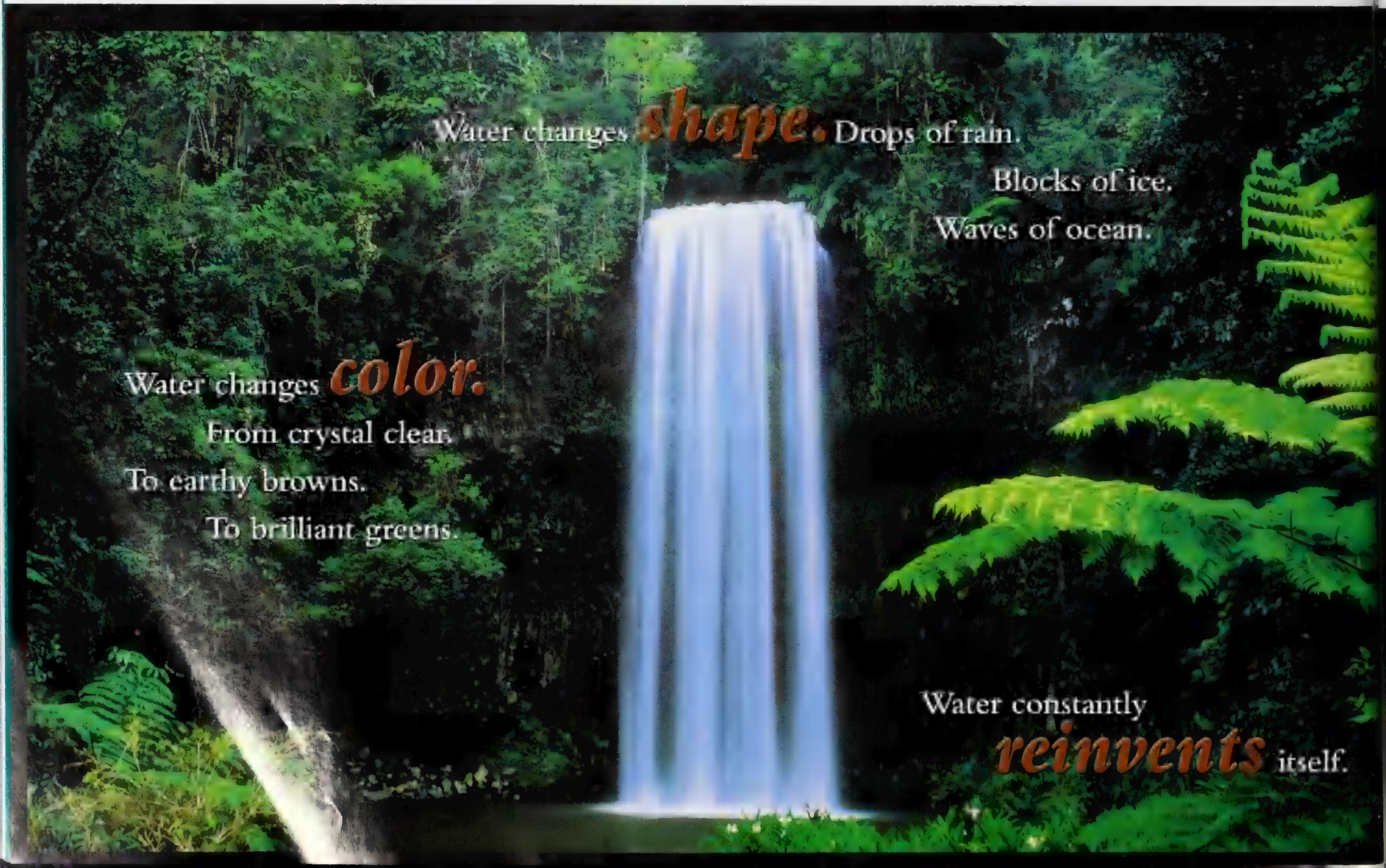
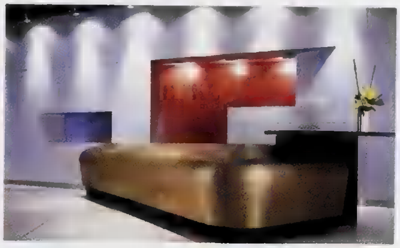


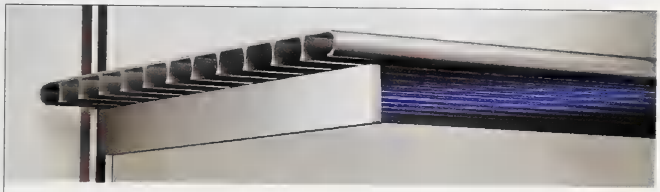
▼ Carpet compositions

Mannington Commercial introduces three new modular products for corporate commercial interiors: Classic Jazz, Jazz Age, and Jam Session. All of these 24 oz products manufactured of Dupont Antron Legacy contain eight colors that have an "antique tea-washed" effect. Classic Jazz features a large-scale spirograph pattern; Jazz Age has a large-scale brushstroke pattern; and Jam Session, an enhanced-textured loop, is a coordinating textured tweed to pull the patterns together. All modular products are backed with Mannington's Infinity Modular backing that contains a minimum of 25 percent recycled content and carries a Lifetime Warranty on tuft bind, static propensity, delamination, edge ravel, and moisture penetration. 800/241-2262. Mannington Commercial, Calhoun, Ga. **CIRCLE 229**



▲ Posh polished plaster

For RTKL's new Dallas office, around 11,000 square feet of Armourcoat polished plaster was used by the architects on feature walls to add depth and define circulation and boundaries. For example, red Armourcoat spatulata finish incorporating the RTKL logo was used in an abstract, Cubist-style panel behind the reception desk. Armourcoat's use on the office's curved staircase walls demonstrates its ability to be applied to curved substrates. 800/886-3626. Armourcoat Surface Finishes, North Providence, R.I. **CIRCLE 230**



▲ Aluminum shelving

Rangine Corporation's extruded aluminum shelf features a low-profile design that exceeds the strength and stiffness of ¾" plywood. Used in either wall-mounted or pole-supported applications, shelf depths of 4", 6", 8", 10", and 12" can be achieved by combining sections that are 4" and 6" deep. Shelving can be ordered in lengths up to 12'. 800/826-6006. Rangine Corporation, Millis, Mass. **CIRCLE 231**

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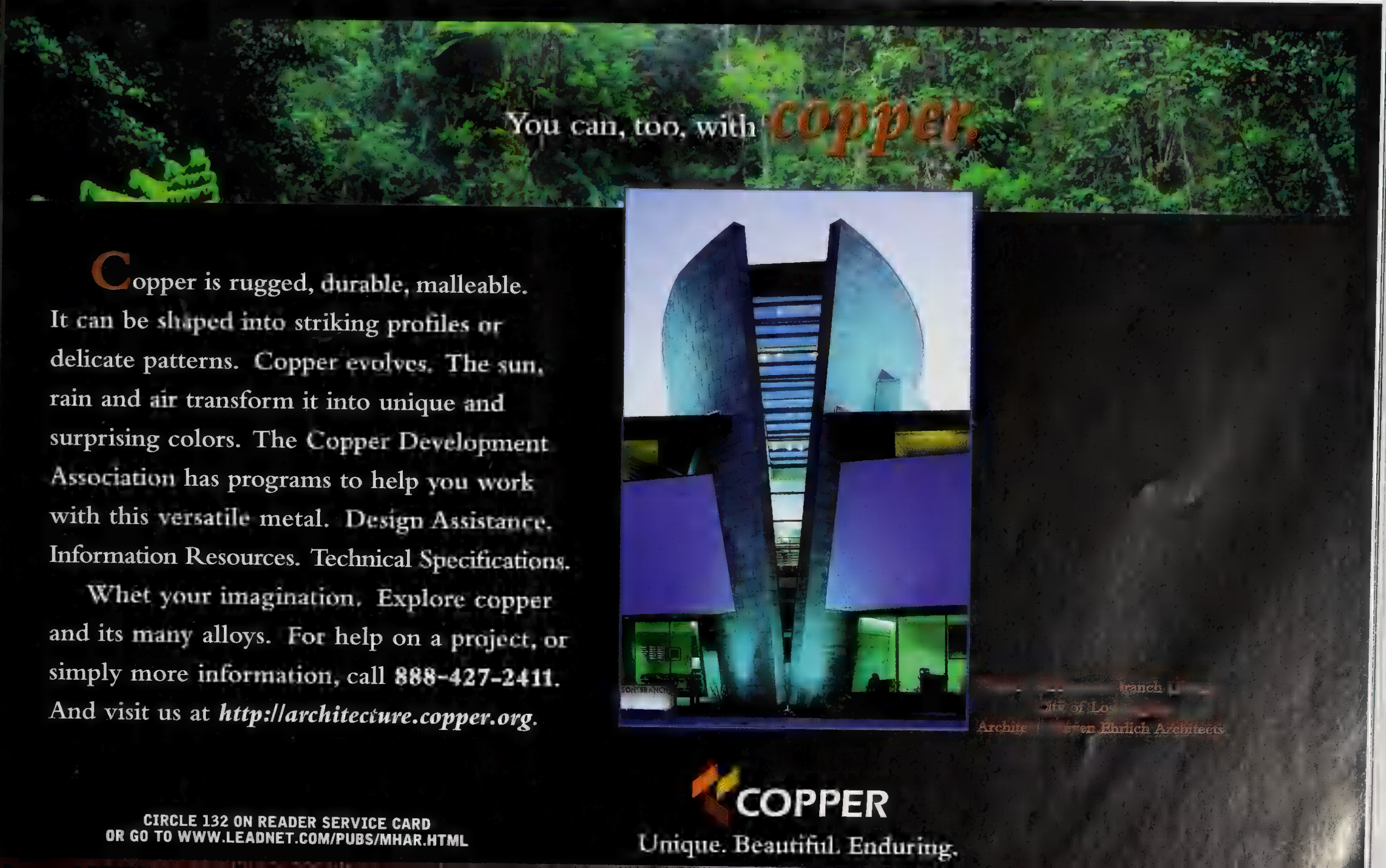

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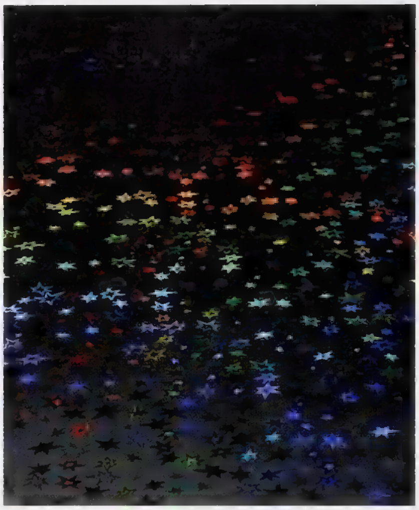
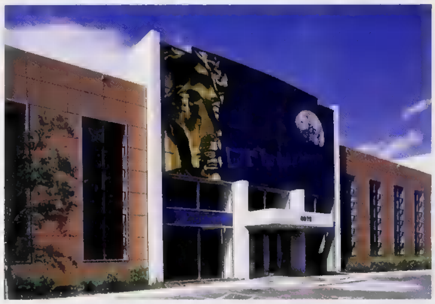
Product Briefs

► Glitter effects



Paparazzi! holographic surfacing from Nevamar is a new decorative surface option that offers glitter effects for a wide range of vertical-use applications. The collection is made possible through the employment of the latest optical embossing technology and features four reflective effects that can be applied to any Nevamar solid color offering. The surfacing is ideal for low-abrasion vertical applications such as wall cladding, signage, soffits, and accent strips, plus a wide range of retail, gaming, and entertainment fixtures, kiosks, and exhibit booths. Because of its special material composition and construction, Paparazzi! does not offer significant abrasion resistance. It is available in 48" x 120" sheets in a .039" thickness. 800/638-4380. Decorative Products Division, Odenton, Md. **CIRCLE 232**



▲ Miami-grade facade

Above the entrance to Imolatile's new Miami showroom is a 42' long tile mural created on a computer by Italian artist Mauro Andrea. A gigantic ink-jet-style printer sprayed vitreous oxide colors on Imola-made stoneware tiles, which were then fired to an impervious ceramic finish. The building's facade is finished in a structural-curtain-wall system called Imolawalls. The 36" porcelain stoneware panels are strong and lightweight, resistant to hurricane-force winds, and feature a mechanical attachment approved by Miami-Dade County for wind resistance. 800/35-IMOLA. Imolatile, Miami, Fla. **CIRCLE 233**

► Ocean air-conditioning

For the Donald Bren Hall at the University of California, Santa Barbara, Wausau manufactured the daylight-harvesting 2250 Series window system. Facing the ocean, the office wing has no air-conditioning but relies on flow-through ventilation with Wausau's operable windows and transoms. 877/678-2983. Wausau Window and Wall Systems, Wausau, Wis. **CIRCLE 234**

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ARNE JACOBSEN TODAY:
PANEL DISCUSSION

The American-Scandinavian Foundation and ARCHITECTURAL RECORD present a panel discussion in which James Stewart Polshek, the architect of Scandinavia House, Robert Ivy, editor in chief of ARCHITECTURAL RECORD, and Nicholas Adams, an architectural historian, analyze the influence of **Arne Jacobsen**'s architecture on current work. The discussion is moderated by Christopher Mount, the curatorial consultant for *Arne Jacobsen: A Centenary Exhibition* on view at the Scandinavia House, September 27–November 9, 2002.

Arne Jacobsen, Texaco petrol station in Bellevue, Denmark, photo by Strüwing, 1937.

Thursday, October 31, 2002, 6:30 p.m.

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Product Briefs

▼ Aerofoil fins

Levolux claims the company's aerofoil fins cut solar heat gain and offer the advantages of a conventional brise-soleil, such as good outward visibility and energy savings. Levolux aerofoil fins may be installed in vertical, horizontal, or angled situations. They are manufactured from extruded aluminum sections and may be mounted at a fixed angle or with an adjustable manual or motorized system. Complete assemblies that incorporate walkways and supports together with handrail and other systems may be created using aluminum and steel components. Perforated fins and timber and glass options are also available. 44 20 8863 9111. Levolux, Middlesex, U.K. **CIRCLE 235**

▲ Steady expansion

The Archtec bridge-reinforcement system utilizes technology and drilling methods designed to strengthen masonry arch bridges while maintaining their historical integrity. A computer model determines the load-carrying capacity of the bridge before the system is installed. Archtec has no impact on the environment and can be completed with little or no traffic delays. 800/363-6066. Cintec America, Washington, D.C. **CIRCLE 236**

▲ Healing ceiling

The ceiling design of the new Children's Renal Center at the University of California at San Francisco Medical Center was named the winner of USG Interiors' Astro Climaplus Ceiling Panel design competition. The new facility was designed by the medical center's Office of Design and Construction. It combines vibrant color with recurring curved design elements in the floor, ceilings, and casework finishes to create a noninstitutional look for the center's young patients. 800/USG-4YOU. USG Corporation, Chicago. **CIRCLE 237**

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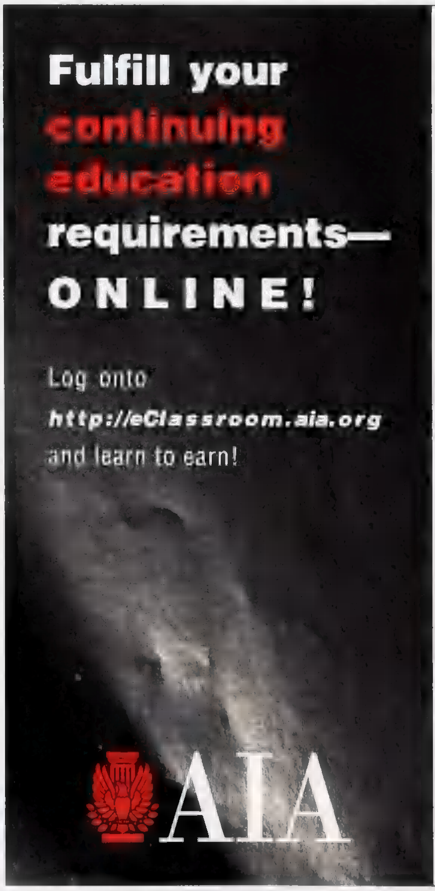
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Product Literature

Underlayment brochure

A new eight-page brochure provides information on the features and benefits of Levelrock-brand floor underlayment, a high-strength line of poured gypsum from the Industrial Products Division of USG. 800/487-4431. USG Corporation, Chicago. **CIRCLE 238**

Air-filtration magazine

Camfil Farr has launched a magazine to provide news and information on the latest developments in air filtration. Titled *Airmail*, each issue will include problem-solving case studies, air-filter-testing updates, commentary on current and proposed filtration standards around the world, and other timely information. The magazine will serve as a tool for those who buy and specify air-filtration equipment for manufacturing plants and other industrial facilities, commercial buildings, schools, hospitals, health-care facilities, and more. 973/616-7300. Camfil Farr, Riverdale, N.J. **CIRCLE 239**

Coffee-table design resource

The 2002 edition of *Kultur im Bad*, a catalog detailing Dornbracht's bath and kitchen fixtures and accessories, is available. The 256-page, soft-cover book can serve equally as a coffee-table book and a design library resource. It features added photos and descriptions as well as an excerpt from "Water and Life," an essay by Simonetta Carbonaro, the Domus Academy professor/psychologist, that discusses the cultural and social aspects of the need for water. Under the subtitle of *Ideas for Living Spaces*, Dornbracht's products are classified into three themes: *Eternity*, *Imagination*, and *Transfer*. 800/774-1181. Dornbracht USA, Duluth, Ga. **CIRCLE 240**

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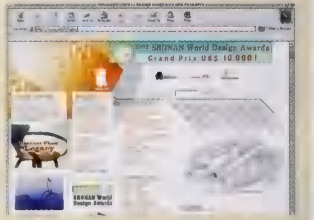
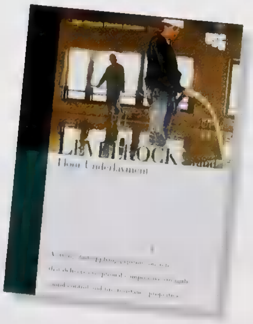
Recently redesigned Web source for design-related jobs, events, links, and workshops **www.core77.com**

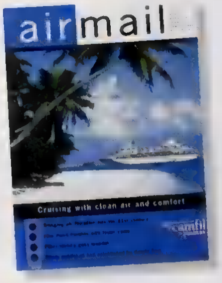


Redesigned Web site for electronic and magnetic lighting ballasts **www.universalballast.com**

Windows information targeted specifically for architects **www.simonton.com**

Sharp's solar cells, modules, and systems available in North America **www.sharpusa.com/products**





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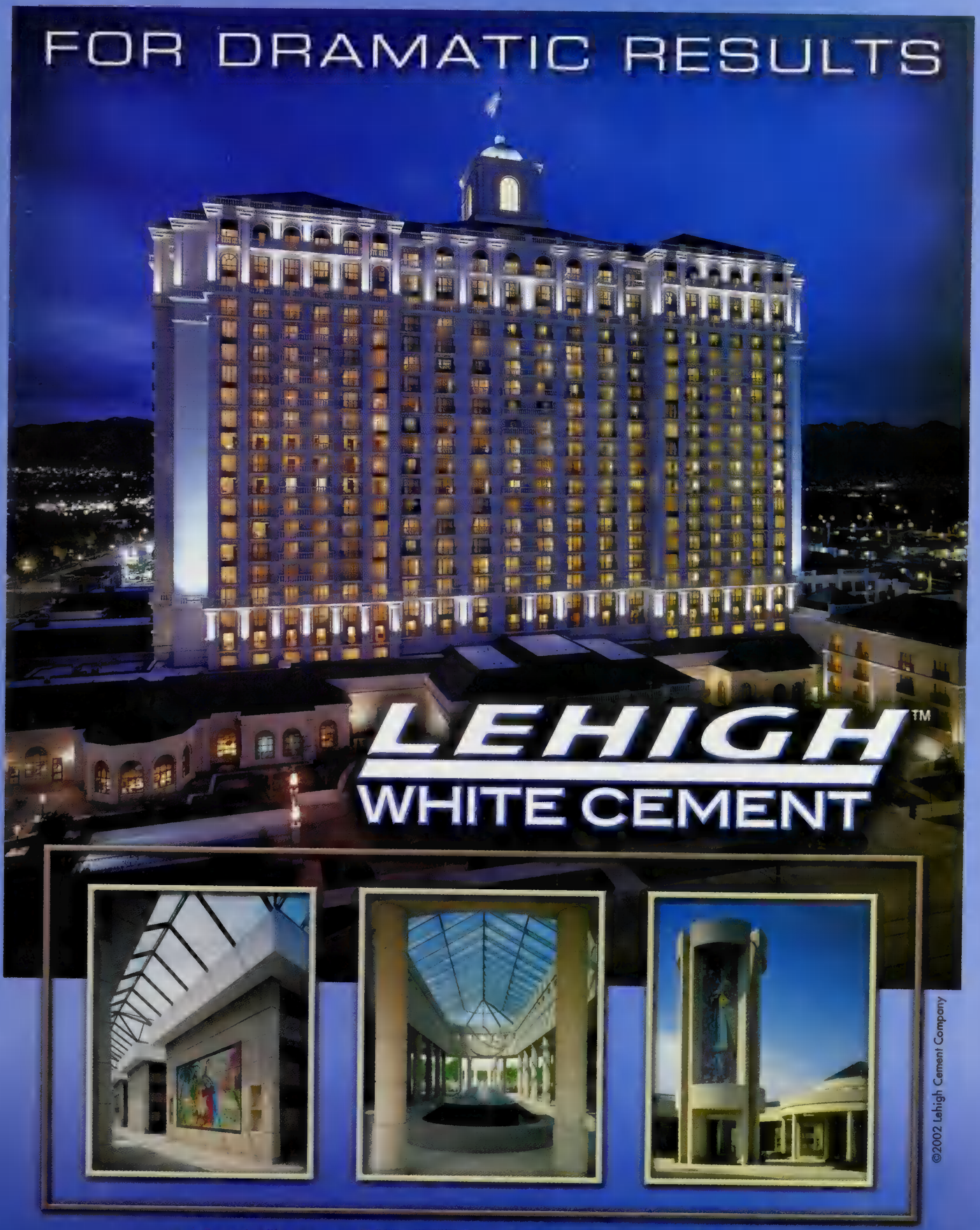

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Product Literature

Finnish fireplaces

Tulikivi, a Finnish manufacturer for soapstone fireplaces, bake ovens, and stoves, has launched a new generation of products, which are illustrated in their newest catalog. The catalog also presents ideas for using Tulikivi soapstone tiles in kitchens and baths for counters, shelving, and walls. 800/843-3473. Tulikivi U.S., New York City. CIRCLE 241

NCMA publications

The National Concrete Masonry Association now offers its 2002 catalog of publications, including the new *Concrete Masonry Wall Design Software CMS-10* and *Design Software for Segmental Retaining Walls*. 703/713-1900. National Concrete Masonry Association, Herndon, Va. CIRCLE 242

Latest lighting brochures

Lithonia Lighting has developed two new lighting brochures for specifiers. The *Rough Service Products* brochure is a 20-page, four-color resource showcasing Lithonia's entire line of lighting fixtures designed for areas where safety and security are a concern. Lithonia also offers a new brochure that illustrates the capabilities of the Synergy integrated-lighting-control system. The Synergy brochure uses a series of vignettes to illustrate Synergy technology in action, from basic low-voltage switching and occupancy sensing to daylight harvesting, scheduling, and architectural dimming. 770/922-9000. Acuity Lighting Group, Conyers, Ga. CIRCLE 243

Roofing codes manual

The NRCA Building Codes Manual offers a comprehensive analysis of model building-code requirements applicable for specific roof system types in the United States. An organized list of roofing-specific reference standards required for code compliance is included. 800/323-9545. National Roofing Contractors Association, Rosemont, Ill. CIRCLE 244

Wood finishing CD

The Hardwood Council has just released *The Finishing Touch* CD, Version 2.0, an expanded version of the original CD. The updated CD has several new features, including a new *Lumber Grade Stain Guide* and an expanded *Finishing Tips* section that features practical advice from the American Wood Finishing Institute. 412/281-4980. The Hardwood Council, Oakmont, Pa. CIRCLE 245

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Record Houses 2003

The editors of ARCHITECTURAL RECORD announce the 48th annual RECORD HOUSES awards program. This program is open to any registered architect. Of particular interest are projects that incorporate innovative programs, building technology, and use of materials. The entry fee is $50 per submission; please make checks payable to ARCHITECTURAL RECORD. Submissions must also include plan(s), photographs (transparencies, slides, or prints), this entry form, and a brief project description, bound firmly in an 8 ½-by-11-inch folder—postmarked no later than November 4, 2002. Anonymity is not necessary. Winning entries will be featured in the 2003 RECORD HOUSES. Other submissions will be returned or scheduled for a future issue. Please include a self-addressed envelope with the appropriate postage, and allow 10 weeks for return.

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Name of project:______________________________

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If previously (or scheduled to be) published, please state name of magazine and publication date:

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Agreement: We will not offer this project for consideration by another national design magazine during the 10-week review period at ARCHITECTURAL RECORD.

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Submissions should be mailed to:
Sarah Amelar • RECORD HOUSES • ARCHITECTURAL RECORD
Two Penn Plaza • Ninth Floor • New York, NY 10121

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Program title: **"Both New and Improved Advances in Seismic Technologies Promise Safer Buildings" (10/02, page 185).** 10YEDITV

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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Program title: **"Understanding the UL Directory: Fire-Resistant Assemblies" (10/02, page 213)** 10YSPONR

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
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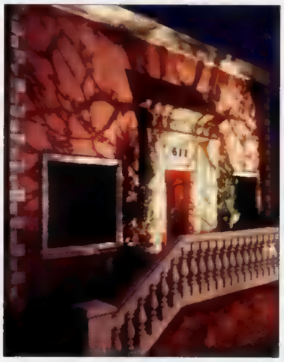

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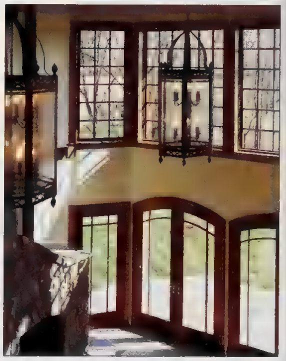

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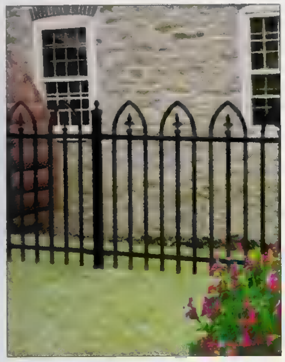

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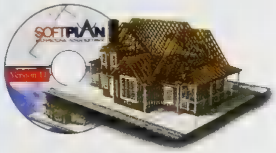

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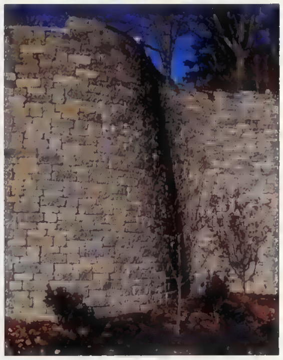

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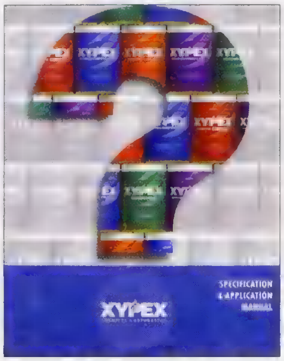

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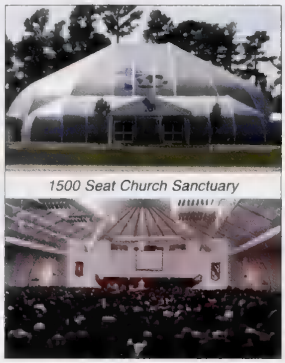

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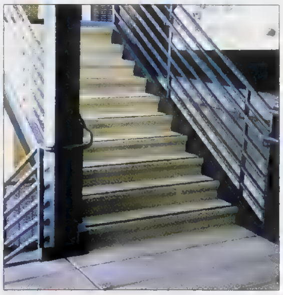

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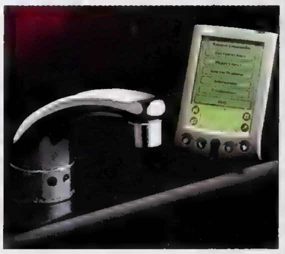

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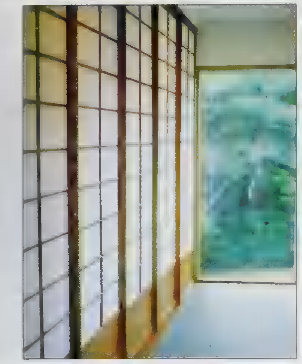

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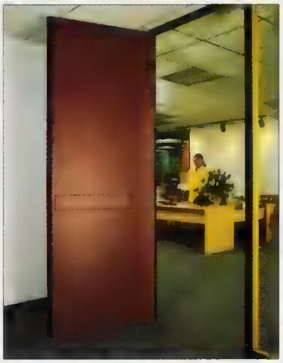
Applications



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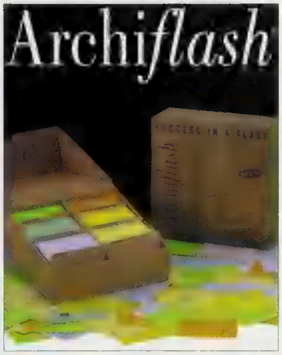

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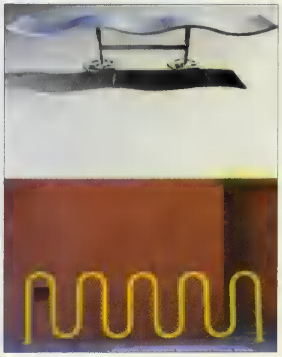

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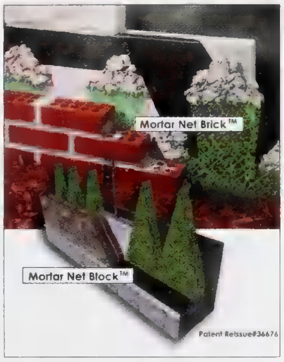

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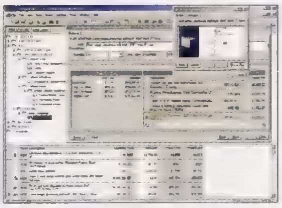

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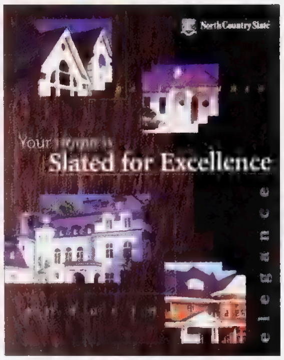

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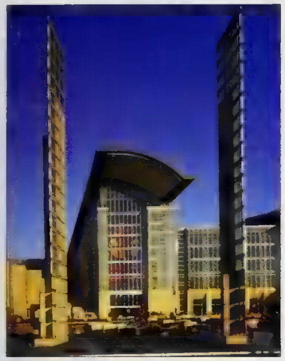

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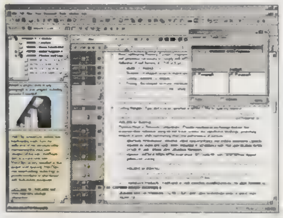

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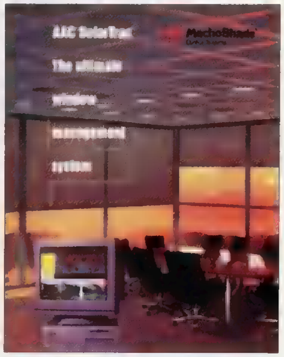

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UNIVERSITY OF OREGON DEPARTMENT OF ARCHITECTURE

The Department of Architecture at the University of Oregon seeks thoughtful, skillful, and effective faculty members for a number of positions ranging from post-graduate fellow to distinguished professor. Successful applicants must be able to demonstrate the promise of effective and inspiring teaching in architectural design studios and specific subject area courses. Fellowship in Architectural Design + Structures: The department is seeking post-graduate and/or professional candidates with an interest in developing a career in teaching. The design fellowship offers the opportunity to gain experience in studio instruction and to develop an area of subject course specialization. This year the search for fellows will focus on candidates who wish to address the synthesis of structure and architecture, and have a strong interest in helping students learn to integrate structural principles into architectural design. Expectations include co-teaching one or two of the large enrollment required structures courses, design studios, and one exploratory elective, with a total of

THE UNIVERSITY OF MICHIGAN Taubman College of Architecture and Urban Planning

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TENURED or TENURE-TRACK FACULTY

The College is seeking candidates for the following positions:

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Design Studies (Doctoral Program in Architecture): A position to strengthen the scholarship and teaching of Design Studies, including one or more of the following areas: design process and methods; morphological studies; or design computing. A Ph.D. or equivalent is required, as is an established record of or clear potential for funded research. Applicants must also demonstrate the capacity to contribute to the professional program(s).

Sustainable Design: The University of Michigan will post a new position in sustainable design. By late October 2002 a more detailed position description can be accessed at http://www.tcaup.edu/faculty/. This will be a joint position between the Taubman College of Architecture and Urban Planning and the School of Natural Resources and Environment. The search is for a person who is knowledgeable and experienced in the application of ecological principles in the analysis and design of the built and natural environment. The candidate must excel in teaching design studio to architecture and landscape architecture students. The person should also be able to teach support courses, carry out funded research in sustainable design and/or pursue a professional practice.

FELLOWSHIPS

The Architecture Program also offers three one-year teaching fellowships: the William Muschenheim Fellowship for individuals wishing to begin an academic career, the Walter B. Sanders Fellowship for experienced practitioners, and the Willard A. Oberdick Fellowship for individuals interested in building science and design. Fellows spend one academic year in residence with the possibility of ongoing appointments. **The Doctoral Program in Architecture** offers the Colin Clipson Fellowship as an opportunity for senior or junior level faculty to advance their program of research in design and to contribute to the scholarship and teaching of the doctoral program. This appointment offers a residency of one to four terms.

Applicants for any of these positions should send a letter explaining their interest in the position, a curriculum vitae, names of three references and a portfolio of their professional or scholarly work. Fellowship applicants should also include a research proposal; Clipson Fellowship applicants should include a teaching proposal as well. Review of applications will begin November 1, 2002 with a deadline of January 15, 2003. Interviews are planned for January through March 2003.

Please see the college website for more information:http://www.tcaup.umich.edu/faculty/

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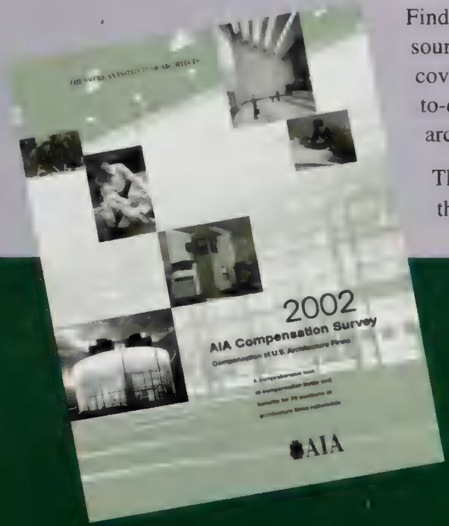

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Elizabeth Barlow Rogers: caretaker of the landscape

Interviewed by John E. Czarnecki, Assoc. AIA

Thanks to the efforts of Elizabeth Barlow Rogers, Frederick Law Olmsted's vision for New York's Central Park lives on for future generations. A resident of the city since 1964, Rogers was the first person to hold the title of Central Park Administrator, a position she assumed in 1979. The following year, she founded and served as first president of the Central Park Conservancy, created to bring citizen support to Central Park restoration and management. She stepped down from the conservancy in 1996. This fall, she developed a new curriculum as the first director of Garden History and Landscape Studies at the Bard Graduate Center for Studies in the Decorative Arts, Design, and Culture in New York City.

Q: *Tell me about the new curriculum that you have begun in your role as director of Garden History and Landscape Studies at Bard.* We are breaking new ground here—it's about the future and caring about place. You cannot study landscape design without learning about literature and history and philosophy. Other schools have landscape survey courses, and we have those as well, on the English garden, Baroque garden, and others. But we also have a course just on Central Park, including its management techniques and rebuilding methodology. We have a course called "Reading the Landscape" that will be about the work of landscape architects and designers. So it's very new, and it's very exciting to be creating something from scratch.

The Central Park Conservancy involves private funds supporting public space. It's an interesting marriage of maintenance of the public realm with fund-raising. Is there any concern that the private realm may have too much of a role in the care of what should be public space? Now there's a question that drives me crazy every time, but I'm glad you asked it! It's really based on results, and I don't think that the issue of rich people coming in and taking over Central Park has gone very far. If the city had sufficient funds to care for the park, that would be ideal, but it doesn't. The Conservancy has a track record that is admirable, and the city is very pleased that the money is being raised privately and the park looks so good.

What are your hopes for the future of the World Trade Center site? I don't think those initial designs were so great. My hope is that there will be a poetic sort of place—something very serious and beautiful. When I think of the poetics of place, I think of monuments such as the Vietnam Veteran's Memorial, places that actually move people because they've been done with great sincerity and a kind of poetry. Process and community dialogue are very important, but my hope is that somebody of great imagination and talent can do something that will not get so chewed up in the process. What is needed is a grand vision that goes beyond commercial needs.

Your book Landscape Design: A Cultural and Architectural History *was published in 2001 (Harry N. Abrams). There have been a number of books on landscape—how does yours stand out?* What I tried was to write the history of landscape from a cultural perspective—understanding the cultural dimensions of landscape is very important. There are certain broad themes that are played out in architecture, painting, music, literature, and in landscape design. None of us can inhabit the past, but we can think about the forces that made cultures do what they did, in the way they did it. ***Photograph by Seth Cohen***

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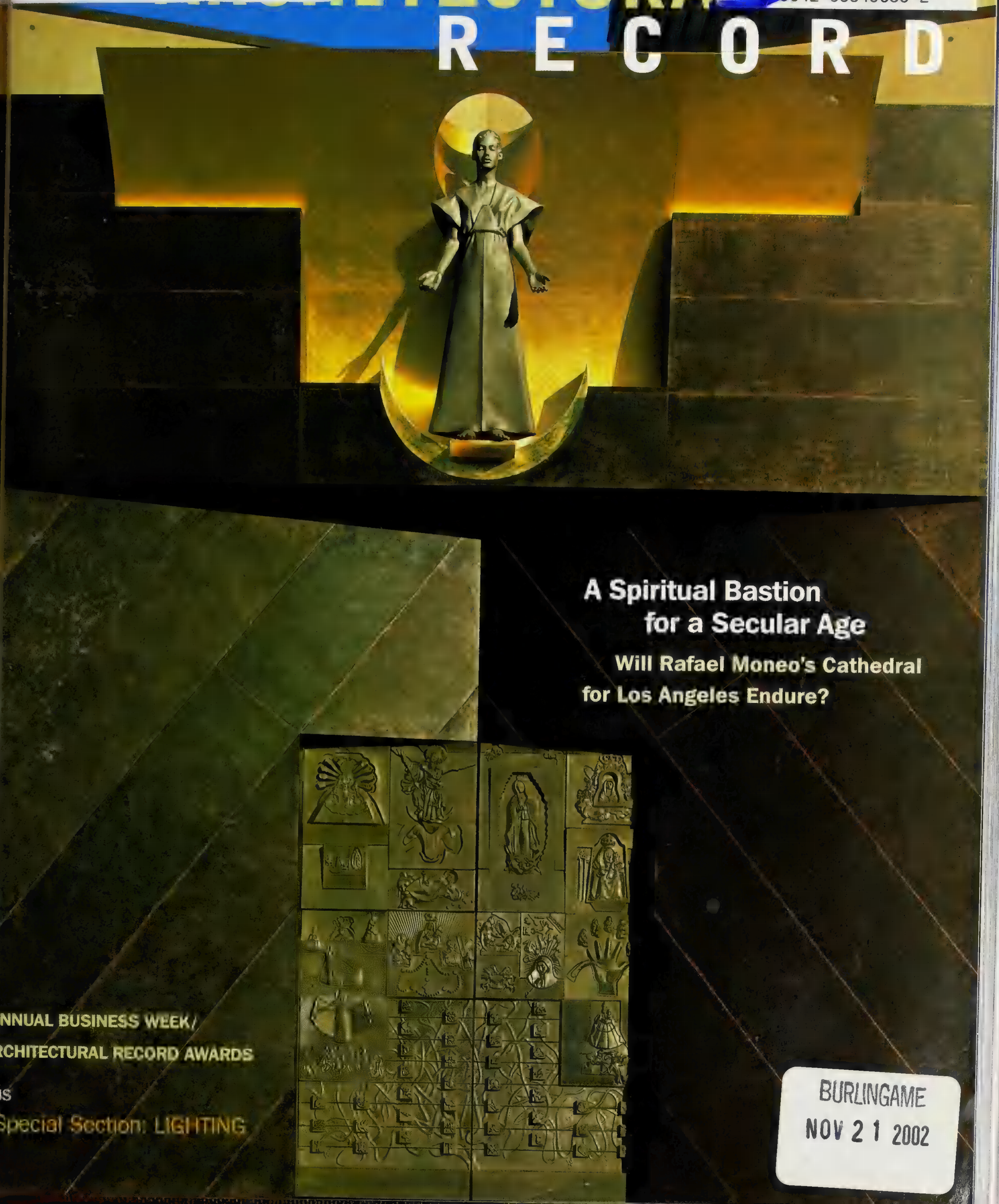

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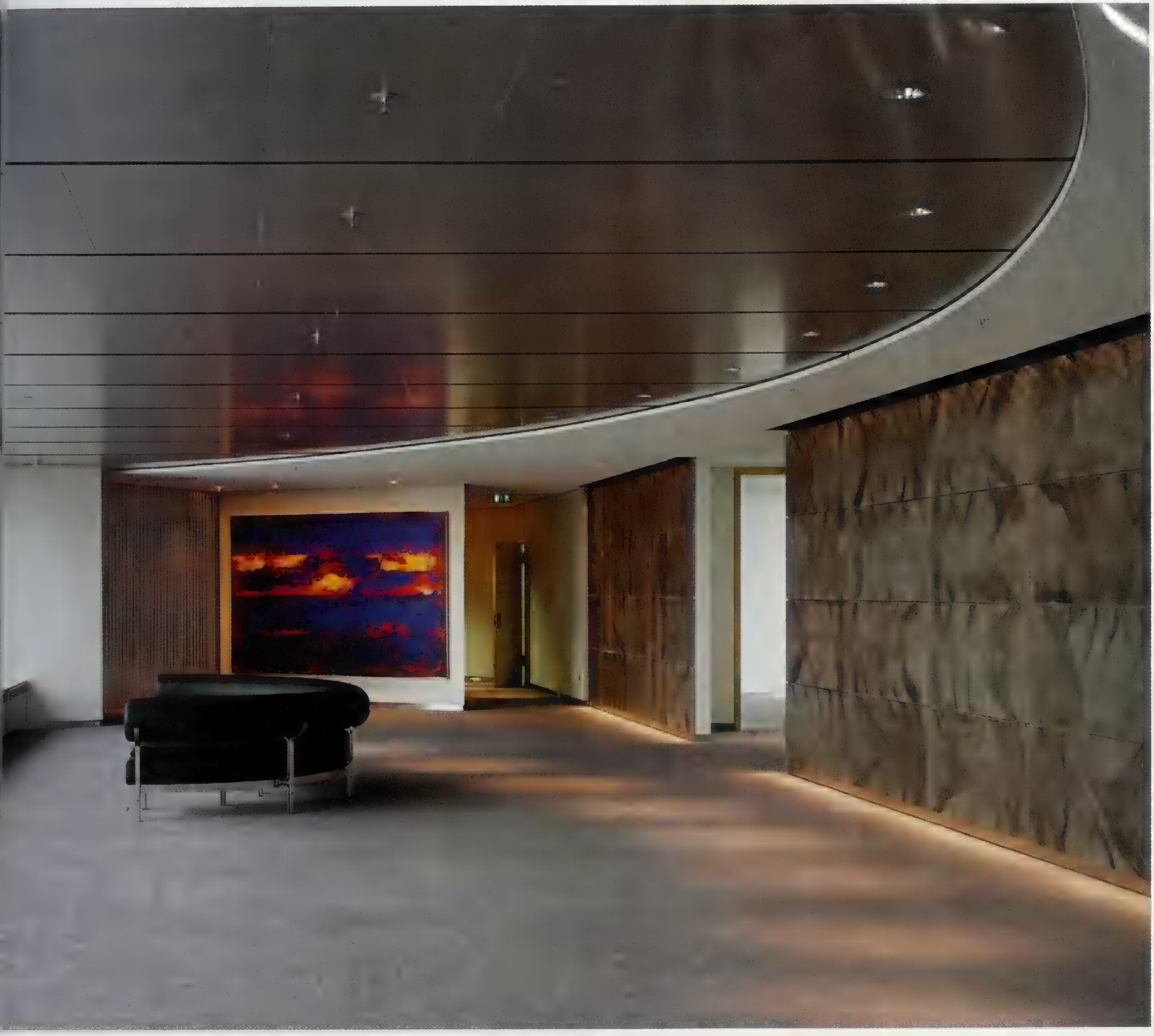

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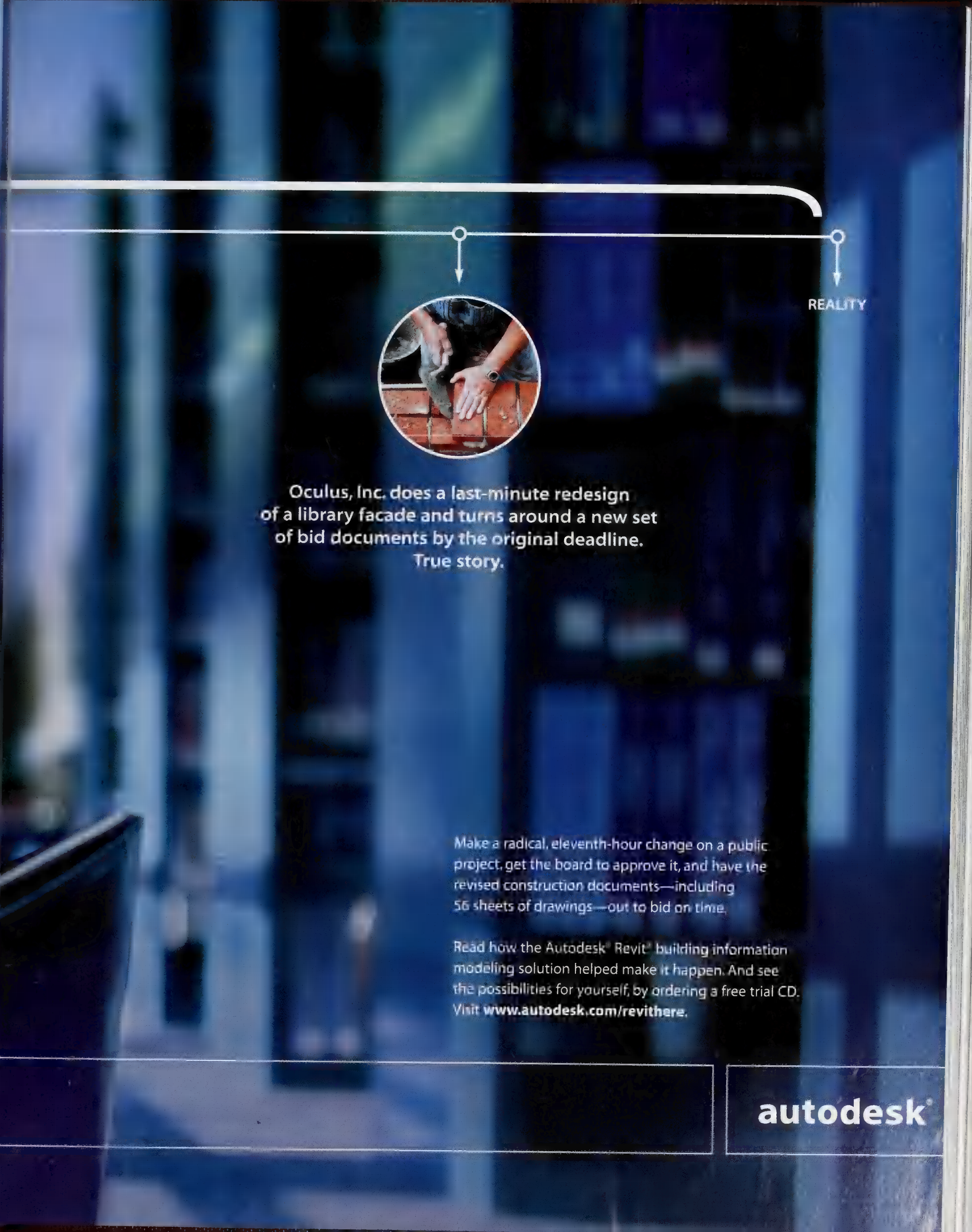

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WEB DESIGN	Susannah Shepherd, *susannah_shepherd@mcgraw-hill.com*
WEB PRODUCTION	Laurie Meisel, *laurie_meisel@mcgraw-hill.com*
EDITORIAL SUPPORT	Linda Ransey, *linda_ransey@mcgraw-hill.com* Randi Greenberg, *randi_greenberg@mcgraw-hill.com*

EDITOR AT LARGE	James S. Russell, AIA, *james_russell@mcgraw-hill.com*
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ILLUSTRATORS	I-Ni Chen, Sophia Murer
CONTRIBUTING EDITORS	Raul Barreneche; Robert Campbell, FAIA; Andrea Oppenheimer Dean; David Dillon; Francis Duffy; Lisa Findley; Blair Kamin; Elizabeth Harrison Kubany; Nancy Levinson; Thomas Mellins; Robert Murray; Sheri Olson, AIA; Nancy Solomon, AIA; Michael Sorkin; Michael Speaks; Tom Vonier, AIA; William Weathersby, Jr.
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VP, MARKETING AND BUSINESS DEVELOPMENT	David Johnson, *dave_johnson@mcgraw-hill.com*
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DIRECTOR, FINANCE	Ike Chong, *ike_chong@mcgraw-hill.com*
DIRECTOR, SPECIAL PROJECTS	Charles Pinyan, *cpinyan@mcgraw-hill.com*
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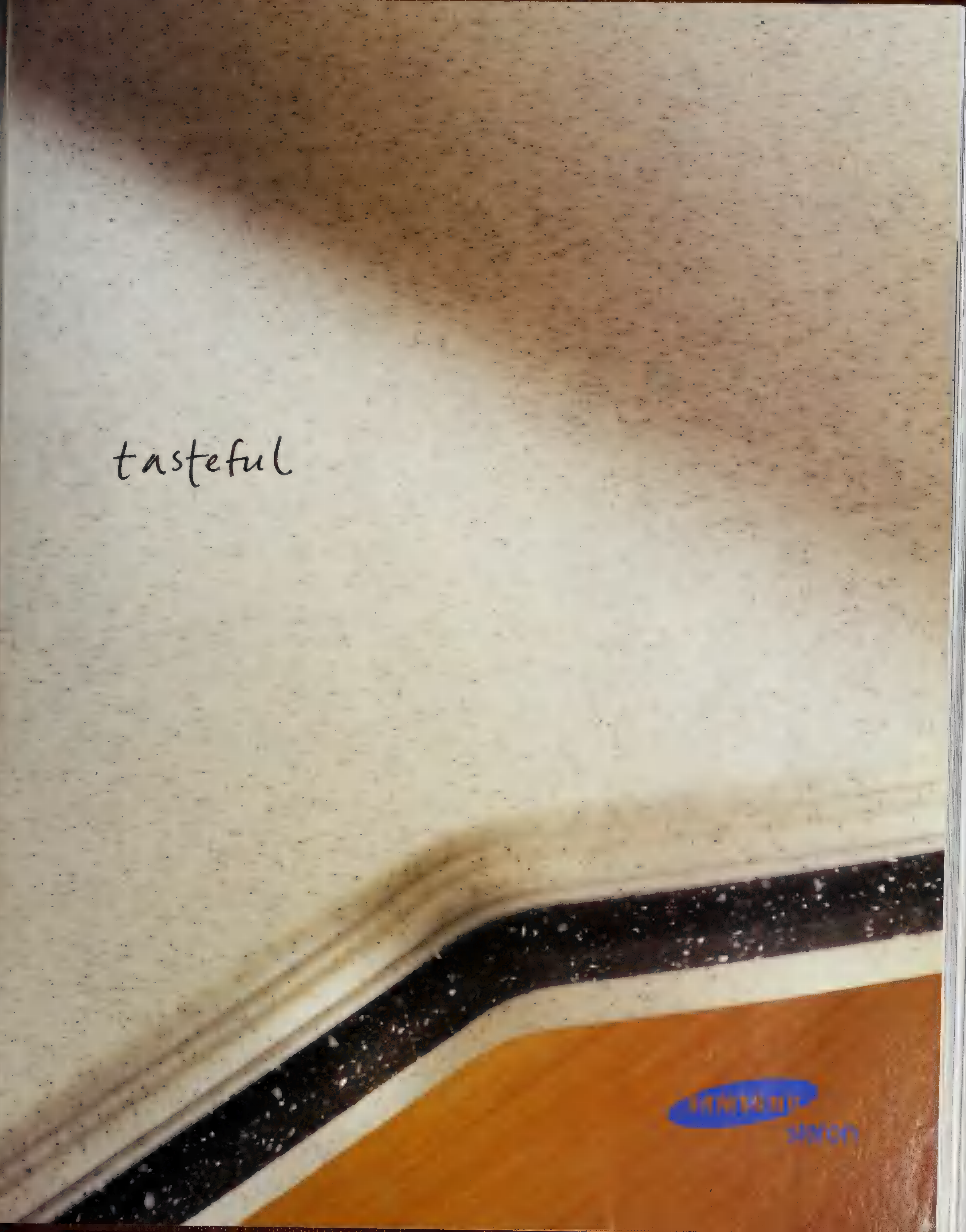
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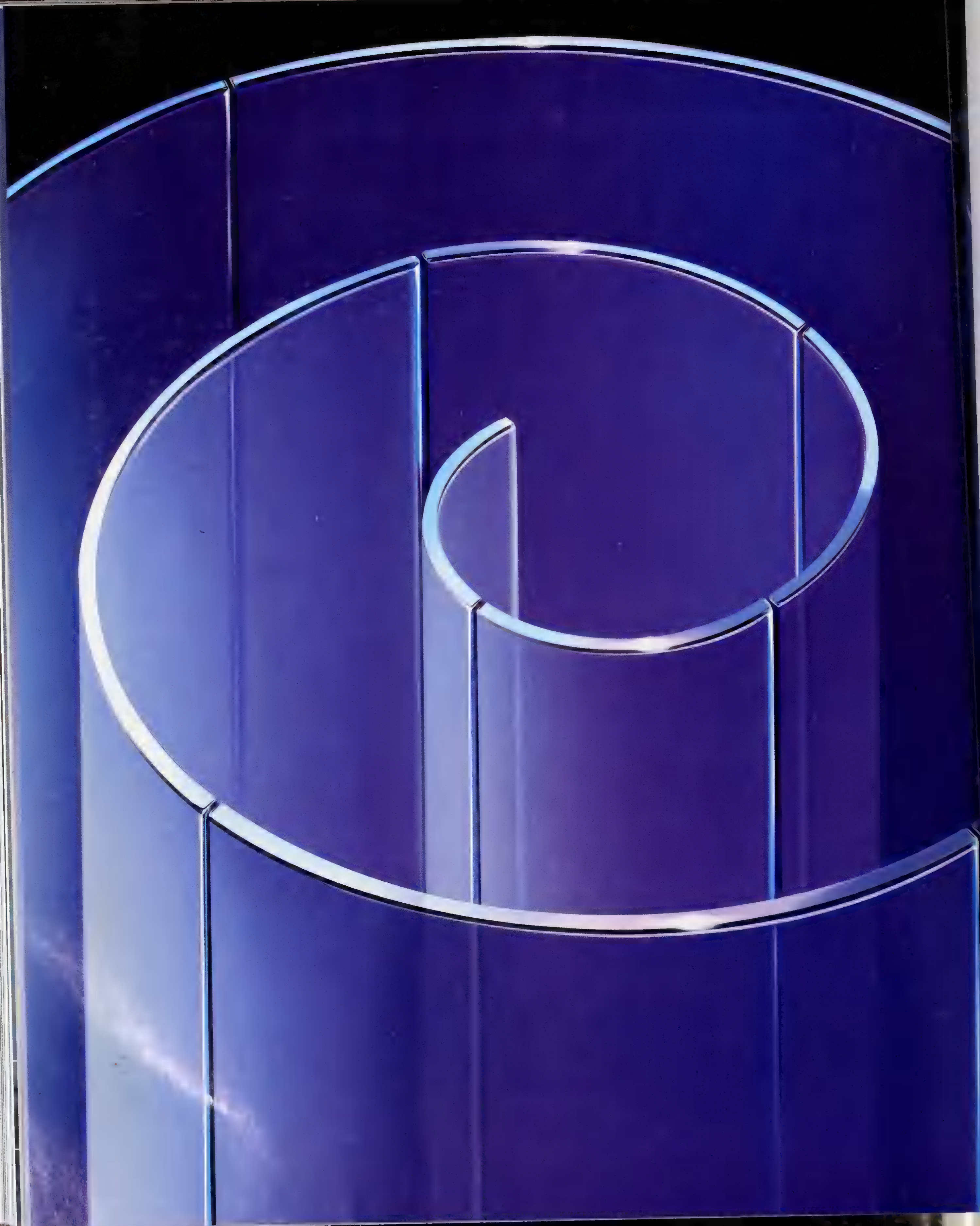

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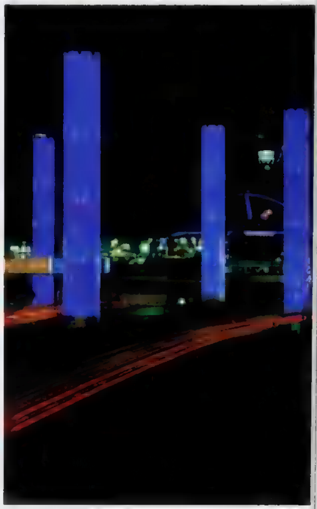

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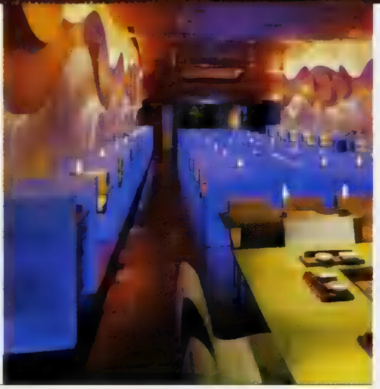
On the Cover: *Cathedral of Our Lady of the Angels, by Rafael Moneo. Photograph by Julius Shulman*
Right: *Morimoto, by Karim Rashid. Photograph by David Joseph/Snaps*



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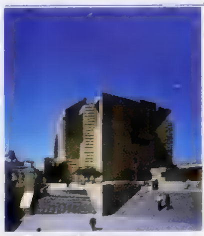
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Rafael Moneo's Cathedral of Our Lady of the Angels: Take an exclusive look at this new landmark's state-of-the-art seismic underpinnings. Plus, an addition to the New York Public Library, a sea terminal in Yokohama, and the new headquarters for Herman Miller.

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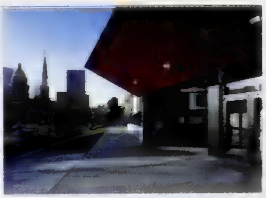
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BTS: Restaurants

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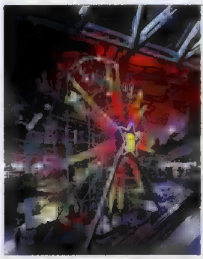
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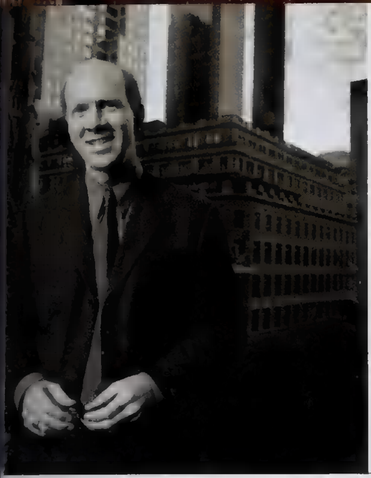

Editorial

Down They Come

By Robert Ivy, FAIA

Still the Modern buildings come down. Sometimes surreptitiously, sometimes in the clear light of day, the neighborhood or the nation awakens to find one more historic property, a distinguished building from the recent past, lying in heaps. How can we allow this callow disregard for our cultural heritage to continue?

Remarkably, human intention, not hurricanes or flood, accounts for much of the damage. During the past year, in March 2002 we lost the Maslon House by Richard Neutra. Located at the Tamarisk Country Club in Rancho Mirage, California, the house (built in 1962) represented an unfolding, mature essay from the architect's later period, which ended with his death in 1970. Over the years, many of Neutra's primary structures have been threatened, despite his seminal role in the development of the Modern movement in California and throughout the country.

This egregious teardown may have been the most celebrated of the past year, but it sadly was not the only significant loss. In greater Los Angeles alone, the country lost Rudolf Schindler's Packard (built in San Marino in 1924) and Wolfe houses (Avalon, California, 1928), along with the more notorious Maslon fiasco in Palm Springs.

Other properties may prove more fortunate, though they're within an inch of their lives. On Long Island, a coalition of forces has apparently saved the Conger Goodyear House, a 1938 gem by Edward Durrell Stone for Goodyear, the first president of the Museum of Modern Art. In that more fortunate case, the World Monuments Fund, which had listed the Old Westbury, Long Island, house among its 2002 list of the "100 Most Endangered Sites," pulled together a funding group including the Barnett Newman Foundation, which purchased the house; the Monument Fund's own capital, which will finance necessary repair work; and the Society for the Preservation of Long Island Antiquities of Cold Spring Harbor, which will hold title to the property until a permanent buyer can be found. International, national, and local resources—all three—were required.

Not all Modern buildings at risk are houses. Any student of architecture who cut teeth in the 1960s or '70s remembers Ralph Rapson's dramatic renderings of the interior of the Tyrone Guthrie Theater in Minneapolis (1963). Yet it too may bite the dust by the year 2005 without positive intervention. As of this writing, the future of Saarinen's TWA terminal remains unresolved, the subject of intense debate. Edward Durrell Stone's formerly vilified and much-discussed Huntington Hartford Museum, by contrast, has apparently found a buyer. Time marches on.

It isn't as if no one cared. While architects play significant roles in historic preservation through the National Trust or the Monuments Fund, one organization stands committed to preserving Modernism per se in 40 countries: DOCOMOMO, founded in Eindhoven, Holland, in 1988. Its ungainly, memorable name stands for "DOcumentation and COnservation of buildings, sites, and neighborhoods of the MOdern MOvement."

Architects, fortunately, can be part of the solution. All persons interested in the tissue of history, the material links of ideas, or in the physical proof of civilization, should decry the senseless demolition or alteration of any great works, including those of the recent past. Our challenge will be to educate others and get them to co-opt our enthusiasms. The public, which includes our own clients and public-building officials, regularly falls prey to economic and development pressures, as well as current fashion. We will need to offer them reasons, legal remedies, and shared passion to prevail. Had anyone in Rancho Mirage, outside the cognoscenti, heard of Richard Neutra? Had anyone singled out the Maslon House for honor or historic respect? Who stands up for the great Modern buildings in your own community? After all, the story is ours to tell, and the subject is the one we love best.

Robert Ivy

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Letters

A higher design in mind

"Should we do what's right or please our clients?" was the question posed in the October issue ["Ethics and the Architect," page 96]. We know the correct answer to this question, but fear the consequences.

The theological implications of this discussion are inescapable: If we assume there is no God, then not only are there no rewards beyond the grave for goodness (so as to justify present hardship), but an objective standard called "good" no longer exists. All morality becomes personal, subjective, and relative.

The theistic worldview is the only context in which our musing on fixed ethical principles even makes sense. Otherwise, expedient self-interest is all that remains of this lofty debate.

—Tom Houg, AIA
South Pasadena, Calif.

Stick to the buildings

I can't tell you how disappointed I am with your magazine's cover photo for the September 2002 issue.

In a profession where women still struggle for parity and equality, it is extremely disturbing to find a model in a black bra on the cover of the AIA's official magazine.

Please reconsider your policy on such issues. It is far behind the times.

—Jean Steinbrecher, AIA
Past President, AIA Northwest,
Washington

Robert Ivy replies: Thank you for your letter. We try diligently not to be condescending or insensitive.

In designing the cover, we debated its merits thoroughly among the entire staff. This cover has drawn favorable reviews from other architects of all stripes—women and men—perhaps more favorable than for any other cover in our experience. Beauty, however, is in the eye of the beholder, and if you're offended, we're sorry.

You might be interested to know that the woman pictured actually owns the apartment featured in the issue and happens to be a professional model who is proud of her home. Her attire is typical casual wear for someone at home in New York City. We intentionally chose the image to lend scale and human warmth to the cover.

The kids are alright

I read with enthusiasm your article in the September issue on the design-build studio at the University of Arkansas [archrecord2, page 63]. It pleases me that your journal records and celebrates the work of many students across the country.

The article states, however, that this is the only program in the country that builds a house in one semester. While I would hate the production schedule to be the main measure of many programs' success at presenting these opportunities to students and emphasizing the role of architecture in community development, allow me to applaud the students at the College of Architecture at the University of North Carolina, Charlotte.

We began our design-build studio in 1995 under the direction of Professor Gregor Weiss, working with Habitat for Humanity in Davidson, North Carolina.

After that first year learning the ropes and management skills, we designed and built our first house in one semester in fall 1996. Since 1997, under the leadership of Professor John Nelson, our students have built one house each fall semester. They design—collectively and with the actual resident—and produce construction documents in the first three weeks of the semester. By week 15, they turn over the keys to the owner! It is an awesome accomplishment, but even more inspiring is to see this transition before the holidays. The five houses completed (we are currently engaged in House 6) are from 1,200 to 1,320 square feet in size (four bedrooms, two full baths). They are built with funds from the Mecklenburg (North Carolina) County Community Development Department. They allocate $45,000 for each house, which is broken down to $30,000 for materials and $5,000 each for mechanical, electrical, and plumbing subcontractors.

The emphasis in our work is to spend three to five years in one neighborhood of low-income residents. Our houses are not supplemented by private donations to emphasize new or more expensive materials. The houses stand as models for other residents to initiate their own projects without special resources, craft, or construction tools and shops. It has become an important part of our program's identity and represents a significant commitment to the community.

—Ken Lambla
Dean, College of Architecture
University of North Carolina,
Charlotte

Making *Fountainhead*-way

In the August 2002 Critique by Robert Campbell, FAIA [page 59], the author quotes an unnamed architect who has apparently suggested the need for Ground Zero to have a "unique, uplifting, and visionary project to rise from the ashes." Campbell then states, "I quote this because it is typical of the kind of romantic, Howard-Roarkian document with which I find myself in total disagreement." In fact, Ayn Rand's character Howard Roark, in her novel *Fountainhead*, would have agreed with Campbell. The antiheroes in the story—Keating, an architect; Francon, architect and owner of an architectural firm; or Toohey, an architectural critic—would have been the lackluster "visionaries" who support a monument with no concern for the needs of the city or the needs of the persons concerned. The character Roark would have taken into consideration the real needs of the city as Campbell purports to do. I can only hope that Mr. Campbell read *Fountainhead* so long ago that he has forgotten the actual characters.

—Maggie Lindorfer
St. Paul

Examining the exam

In an optimistic world, identifying the improved candidate pass rates for the ARE over the past four years would be appropriate, as indicated in the July issue [News, page 29]. But the same number of divisions (three) have shown a fairly sharp drop in pass rates as well since 1999—Mechanical and Electrical Systems, Site Planning, and Building Technology.

Not to be pessimistic, but one must wonder if this is due to a more difficult exam administered by NCARB (were those sections getting too easy to pass?); the profession not mentoring young exam candidates well enough in those knowledge areas; a failure of interns in reporting IDP credits truthfully, or a combination of all three. An increase in pass rates for certain ARE divisions is encouraging, but a decrease in divisions should also create concern.

—F. Michael Ayles, AIA
Young Architects Forum
Advisory Committee Communications
Coordinator, Connecticut

Corrections

In the October issue [page 133], photographer Todd Eberle's name is misspelled, as is Peter Aaron's (ESTO) [page 156]. We regret the errors.

Please send your letters via e-mail to rivy@mcgraw-hill.com.

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Why Vulcraft Composite Joists Received High Marks From Virginia Tech.

When planning the $21 million Torgersen Hal Virginia Tech's advanced communication, information and technology center, the architecture/engineerin firm of Sherertz Franklin Crawford Shaffner, Inc. face a number of design challenges. They included cost flexibility in floor usage, large column free 40′ bays and ample space for HVAC ductwork.

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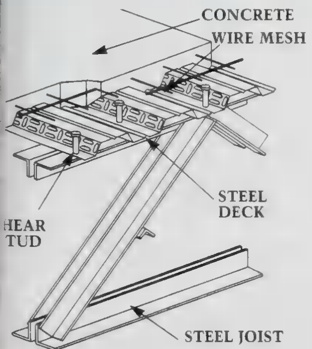

ductwork can run through the open webs of the joists. And the system is almost always less expensive than cast-in-place reinforced concrete construction.

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Record News

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Architects begin WTC plans p. 28
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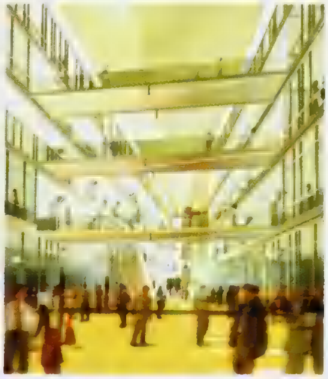
Pelli develops transparent Minneapolis library

Calling it a "contemporary building with very deep roots in the community," Cesar Pelli, FAIA, unveiled his design in early October for a new $120 million, 400,000-square-foot central library in downtown Minneapolis.

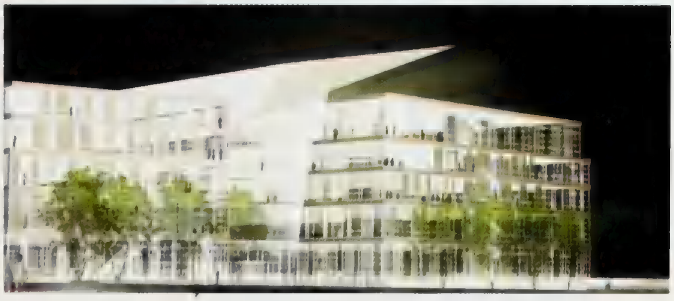
Located on the site of the current library adjacent to the northern end of the Nicollet Mall, Pelli created an understated, transparent design made up of two five-story volumes bisected by an 80-foot-high central atrium. A dramatic zinc-covered asymmetrical "wing" tops the atrium and cantilevers over the sidewalks on both sides of the building. The exterior is sheathed in glass with horizontal banding of Minnesota limestone at each floor.

Four different types of glass will be used, depending on the function of the space behind it. On the south side and enclosing the rare books collection, the glass will be more opaque. On the north side and along the public areas, it will be more transparent. Pelli calls it a "happy serendipity" of the design that the variations in the glass recall books on a shelf.

Along with a 35 percent increase in open-stack space, the new building will have a children's area, a teen center, computer training facilities, expanded parking and bus drop-off areas, and community spaces, including galleries, meeting rooms, and a 235-seat theater. Pelli has located a state-of-the-art planetarium on the prominent northwest corner of the top floor. Although the funding for this $9 million planetarium is still unresolved, the building has been designed in such a way that it can be added in the future. The library's collection has already been relocated, and the existing library building is scheduled to be demolished this fall. Ground breaking is set for April 2003, and the new building is scheduled to open in spring 2006. *Bob Dillon*



The library will include a dramatic atrium (above) and four different types of exterior glass (below).



Mori selected for visitors' center at Wright's Darwin Martin House

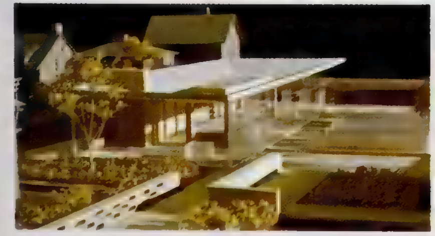
New York–based architect Toshiko Mori, chair of the department of architecture at the Harvard Graduate School of Design, has been selected to design a new visitors' center at the Darwin Martin House complex in Buffalo, New York, designed by Frank Lloyd Wright in 1903–7.

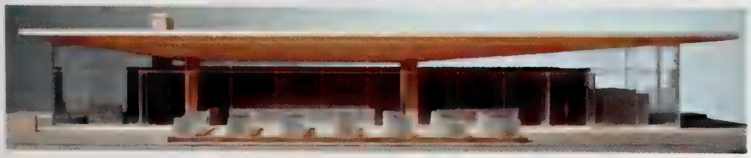
The Martin House Restoration Corporation, established in 1992, selected Mori and is building the visitors' center. She was chosen in an invited competition with Office dA, Boston; Architectural Research Office, New York; Schwartz Silver Architects, Boston; and Brian Healy Architects, Boston.

More than $20 million has been raised out of a projected $23 million, both to build the visitors' center and to restore the complex, a National Historic Landmark—including replication of missing art-glass windows and furnishings, as well as the reconstruction of gardens, the conservatory and carriage house, and a 100-foot-long pergola that was demolished in 1960.

Mori's building, which will open in 2005, will include a visitor-orientation space, interpretive galleries, education spaces, and a museum shop. Mori will work with Hamilton Houston Lowrie Architects, restoration architects for the Martin House project, and Christopher Chadbourne and Associates, Boston-based museum planning and exhibition designers.

Mori says she envisions the visitors' center as "a pavilion" and as "a contemplative space in dialogue with the complex, preserving the romantic and picturesque quality of the landscape and gardens." *Kathleen Quigley*





Mori's glass pavilion (top left and bottom) will be adjacent to the Martin House complex (top right).

OFF THE RECORD

Allied Works Architecture of Portland, Oregon, led by Brad Cloepfil, has been selected to design the Seattle Art Museum's expansion. Other firms being considered were Pei Partnership Architects and [illegible] & Partners. The 300,000-square-foot expansion will be in a new 40-story tower for Washington Mutual by the Seattle office of NBBJ.

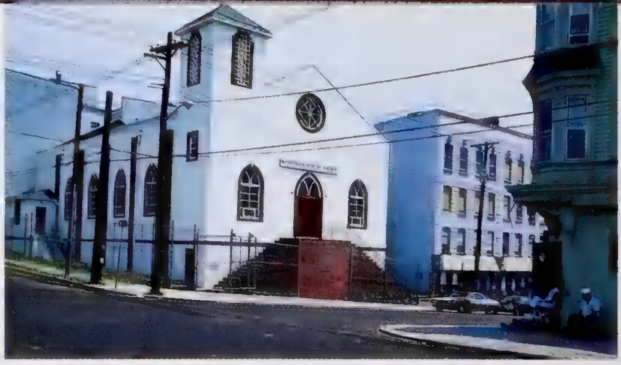
New York City's Lincoln Center for the Performing Arts has asked five architecture firms to submit design plans for the public spaces of its 16-acre campus: Santiago Calatrava; Cooper, Robertson & Partners; Diller + Scofidio; Foster and Partners; and Richard Meier. A selection will be made in December.

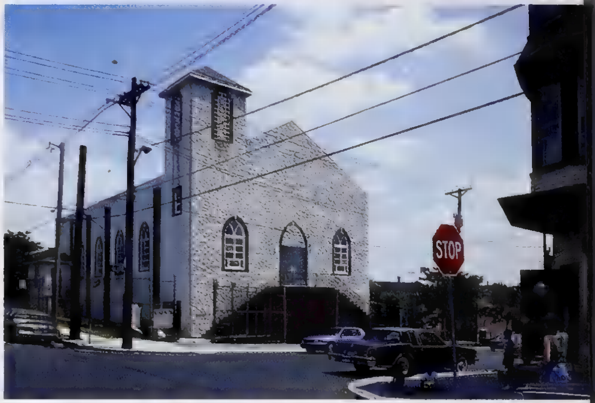
Six finalists were named in the competition for a memorial to victims of the September 11, 2001, terrorist attack on the Pentagon: Shane Williamson, Toronto; Julie Beckman, New York City, with team member Keith Kaseman; Jean Koeppel, Brooklyn, New York, with team member Tom Kowalski; Martin Wickham, Brooklyn, New York, with team member Edwin Zawadzki; Jerry Bowring, Canterbury, New Zealand, with team members Peter England, Richard Weller, and Vladimir Sitta; Michael Meredith, Clifton Park, New York. A winner is expected to be announced by year-end.

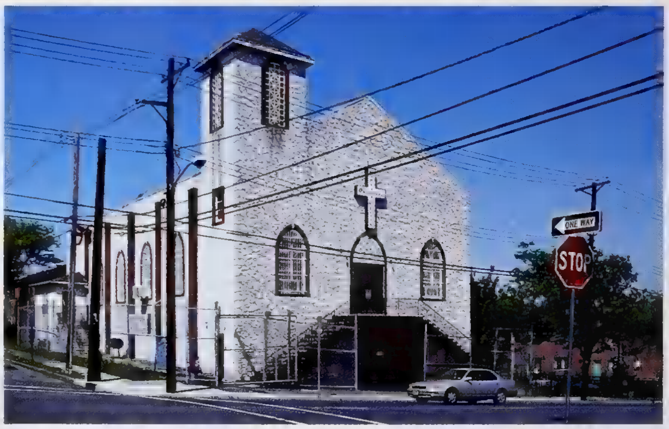
The Los Angeles chapter of the American Institute of Architects (AIA) has named Barton Myers, FAIA, the 2002 AIA/LA Gold Medal recipient.

Cornell University is making its second attempt to select an architect for a new building for its department of architecture. The firms under consideration are Tod Williams Billie Tsien and Associates, Thom Mayne of Morphosis, Smith-Miller + Hawkinson Architects, Barkow Leibinger Architects, and Allied Works Architecture. At press time, a selection was expected in early November.

Urban photographer Camilo Vergara wins MacArthur grant







Camilo Vergara (center left) has photographed evolving urban scenes, including this Newark, N.J., church in (from top) 1980, 1993, and 2002.

Camilo José Vergara, a New York–based photographer who has captured the changing nature of poor urban neighborhoods for three decades, was named as one of 24 MacArthur Fellows for 2002.

The John D. and Catherine T. MacArthur Foundation names 20 to 30 fellows each year to receive a grant, popularly known as the "genius grant," of $500,000, with no stipulation for how the money should be spent. The award recognizes "exceptional creativity, promise for important future advances based on a track record of significant accomplishment, and potential for the fellowship to facilitate subsequent creative work," according to the foundation.

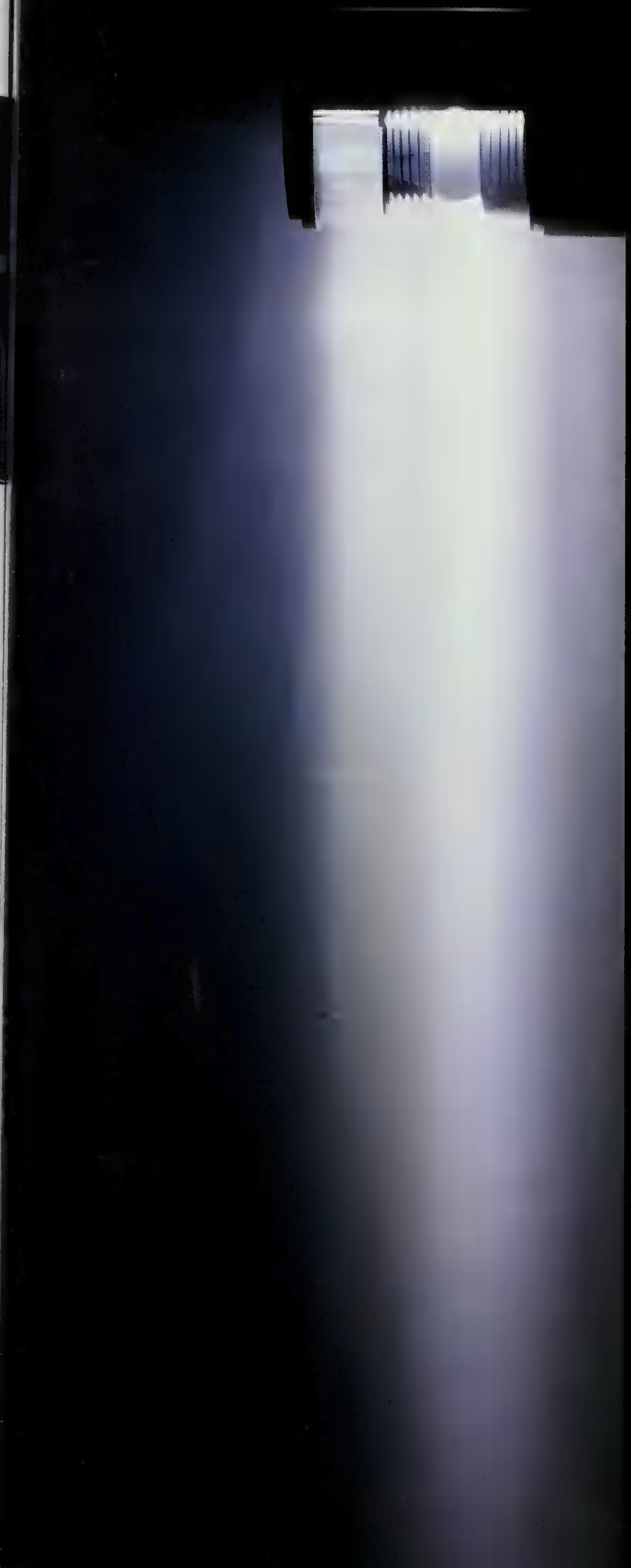
A native of Chile who moved to the United States in 1965, Vergara, who was trained as a sociologist, has made urban neighborhoods the focus of his photography since 1977. Winning the MacArthur grant "has brought quite a bit of new interest to my work," Vergara says. "It means that I have some security and I'll be able to pay the rent."

Vergara also photographed the World Trade Center from its construction through September 11, 2001. An exhibition of those photographs, *Twin Towers Remembered,* originated at the National Building Museum in late 2001 and is now at the Museum of the City of San Francisco until January 15, 2003. A book of the photos was published in late 2001 under the same title. In the photos, many of which are taken from neighborhoods far from Lower Manhattan, "you get the sense of the omnipresence of the towers," Vergara says.

ergara's photograph of the WTC towers and an pproaching ship was taken in 1978.

He is currently focused on documenting the changes in places of worship over time, including traditional churches that have been abandoned or changed use, urban storefront churches, and suburban megachurches. Vergara would also like to update his 1995 book, *The New American Ghetto*. "There's been important changes in the very poor areas of cities," he says.

Among the 24 fellows that the foundation named this year are a seismologist, several musicians, and scientists. Three architects—Elizabeth Diller, Ricardo Scofidio, and the late Samuel Mockbee—have been named fellows since 1981. *J.E.C. and Kevin Lerner*



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SPECIAL REPORT

Six unique teams of world-renowned architects selected to develop design proposals for World Trade Center site

Overlooking the WTC site, architects Bill Morrish (left), Rafael Viñoly (second from left), and Frederic Schwartz (far right) of the Think group, listen to Alexander Garvin, V.P. of planning, design, and development for the LMDC.

The Lower Manhattan Development Corporation (LMDC) named six teams of architects and planners in late September to participate in a design study for the World Trade Center (WTC) site. The six teams were culled from 407 submissions.

Each of the six teams will receive $40,000 to develop plan proposals for the site under new guidelines that emerged after negative public reaction to the six official first-stage proposals were released in July. The new program calls for 6.5 to 10 million square feet of office space on-site (down from the original 11 million), 600,000 to one million square feet of retail on-site, a mix of cultural and civic amenities, a "powerful skyline element," and the creation of a promenade on West Street—one of the proposals that met with positive reaction in the first stage of designs. The new program also calls for the exploration of new residential uses near but not on the site, and expresses a preference to keep the "footprints" of the WTC towers free from development.

The six teams must submit their design proposals by the end of November. At that time, the LMDC and the Port Authority of New York and New Jersey will select an unspecified number of "the most promising ideas," and ask the firms behind those ideas to develop specific site-plan proposals. The LMDC expects to present at least three proposals for public review by the end of the year, with a final land-use plan to be released in spring 2003. The selected teams, some containing several architects, planners, or firms, are as follows:

- Studio Daniel Libeskind, Berlin;
- Foster and Partners, London;
- Richard Meier, Peter Eisenman, Charles Gwathmey, and Steven Holl, all of New York City;
- United Architects, a team comprised of Reiser Umemoto, New York City; Foreign Office Architects, London; Greg Lynn FORM, Los Angeles; Imaginary Forces, New York City and Los Angeles; Kevin Kenon Architect, New York City; and UN Studio, Amsterdam;
- Skidmore, Owings & Merrill, New York, with Field Operations, New York City and Philadelphia; Tom Leader, Berkeley; Michael Maltzan, Los Angeles; Neutelings Riedijk, Rotterdam, the Netherlands; SANAA, Tokyo; and with artists Inigo Manglano-Ovalle, Rita McBride, Jessica Stockholder, and Elyn Zimmerman;
- Think, a team including Shigeru Ban, Tokyo; Frederic Schwartz, New York City; Ken Smith, New York City; Rafael Viñoly, New York City, with Arup; Buro Happold Engineers, Bath, England; Jorg Schlaich, Stuttgart, Germany; William Moorish, Charlottesville, Virginia; David Rockwell, New York City; and Jane Marie Smith, Baltimore.

The consultant teams already employed by the LMDC, including Beyer Blinder Belle and Peterson/Littenberg Architecture and Urban Design, will continue to work on the project. In addition, New York firm Ehrenkrantz, Eckstut & Kuhn Architects was hired by the Port Authority as an urban design adviser. *Kevin Lerner*

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SPECIAL REPORT

90 Church Street, just north of the WTC site, will have contaminants removed at a considerable cost.

Closed since 9/11, office to be cleaned of contaminants

The former Federal Office Building at 90 Church Street, just north of the World Trade Center site, sustained considerable damage on September 11, 2001. Airplane wreckage punctured its roof, more than 800 windows were broken, and interiors were subjected to fire. Although it withstood these impacts, the 15-story National Register landmark remains empty—due to contamination. The building's tenants plan eventually to return to the building after having the interior cleaned at a considerable effort and expense.

"When the collapse occurred, that cloud entered our building and filled it with heavy debris and dust" that included asbestos and dioxins, says Tim Hill, senior vice president of property management for Boston Properties, which operates the building. Standing water from fire sprinklers also caused widespread mold damage.

Completed in 1935, the building was designed by Cross & Cross. Master leaseholder 90 Church Street LP, a Boston Properties affiliate, performed a $100 million renovation of the 1 million-square-foot structure in the mid-1990s, after which the Legal Aid Society and the New York City Housing Authority (NYCHA) took occupancy of offices. The NYCHA was the building's largest tenant, occupying 450,000 square feet on seven-and-a-half floors. The Legal Aid Society occupied the building's top three floors, and the first four floors were occupied by the United States Postal Service.

Power and systems have recently been restored, and the building is currently sealed as the three tenants and landlord finalize a unified protocol for clearance and cleanup. Because "contaminants actually got down inside the wall cavity," says Hill, demolition and disposal of all interior finishes is required. John Leitner, a principal of environmental consultant Ambient Group, which is implementing the program, adds that the cleanup will resemble procedures for asbestos remediation.

Tim Oppelt, director of the Environmental Protection Agency's National Risk Management Research Laboratory, explains that this scope of work is unprecedented: "This isn't something that anyone's really had much experience doing."

The limited partnership will oversee the entire cleanup process, and individual insurance claims filed by the landlord and tenants are expected to compensate the cost. While Hill says that a total cost cannot yet be determined, the NYCHA and the Legal Aid Society estimate that damage and dislocation expenses will equal $93 million and $25 million to $30 million, respectively.

Despite the cost, the tenants have committed to returning. NYCHA spokesperson Howard Marder says, "It's our intention to move back if all the work that needs to be done can get done." The agency, like the other tenants, has shifted employees to temporary offices, and Marder says that "we've had to crowd people into spaces that we normally would not have." *David Sokol*

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With a focus on developing professionals, not interns, summit participants discuss education-to-practice continuum

Brian Grieb, an intern from Maryland, asked the key question during last month's summit on architectural internship: "Are we developing interns or professionals?"

A team of 50 people, ranging from architecture students and interns to educators and practitioners, met October 3 to 6 to discuss the transition from architectural education to practice. Organized by *ArchVoices*, an information resource for interns edited by Casius Pealer III and John Cary, Jr., the summit was cochaired by Cary and Laura Lee, AIA, an associate professor at Carnegie Mellon University, Pittsburgh. The University of Oklahoma College of Architecture hosted the event, and the Enkeboll Foundation for the Arts and Architecture provided funding.

The summit included representatives of all five of the collateral organizations—American Institute of Architects, American Institute of Architecture Students, National Architectural Accrediting Board, National Council of Architectural Registration Boards, and American Collegiate Schools of Architecture—as well as the National Organization of Minority Architecture Students. The discussion built upon the 1996 Boyer-Mitgang *Building Community* report and the dialogue initiated at the 1999 Collateral Internship Summit.

"We were emphatic from the beginning that we were dedicated to building on the foundations of things that came before us," Lee said. "These things have merit and history, and let's see how far we can extend them."

Once the summit discussion began, though, it was evident that certain practitioners in attendance were not voluntarily speaking and did not want to debate certain issues, especially if the definition of "architect" was broached. As North Carolina State University dean Marvin Malecha, FAIA, told participants: "There's a whole contingent here that is not willing to negotiate the term 'architect.' They're politely not speaking while others are voicing a more liberal attitude."

"Certain things needed to come to light," Lee later said. "I think there was a lot of progress made.

"Whenever we were able to rein in the discussion back to values and the profession, it was interesting to see how much people were able to move and give up turf or even share turf," said Lee. "People were able to look more broadly than just at the matter of internship and say that this is about the profession and values."

"If we could all look at it in the broader sense of professional development, that would probably have more promise for making it happen," said John McRae, FAIA, vice president of education and training at RTKL Associates, a former dean at Mississippi State University, and the chair of the 1999 summit.

Summit participants learned about comparative professional models, and, in the end, they developed a three-part affirmation (box at left) for the profession to move forward on internship issues.

"I think we're building momentum with things like this," McRae said. "We certainly don't want [intern issues] to be marginalized."

As a next step, *ArchVoices* will initiate an annual survey of interns. Visit www.archvoices.org for the Collateral Internship Task Force recommendations and more about the summit. *J.E.C.*

Internship Summit Affirmation

The 2002 National Internship Summit concluded with the following three-part affirmation by the participants.

We, the participants of the 2002 National Internship Summit, affirm the need for the profession of architecture to collaboratively:

1. Implement the nine Collateral Internship Task Force recommendations enriched by the contemporary areas of need and benchmarks identified during the summit;
2. Evolve the Intern Development Program (IDP) into a comprehensive professional development program with consideration of diverse experience opportunities, existing and new models;
3. Ensure contemporary relevance through a comprehensive review of the criteria and procedures for validation of professional development at regular intervals.

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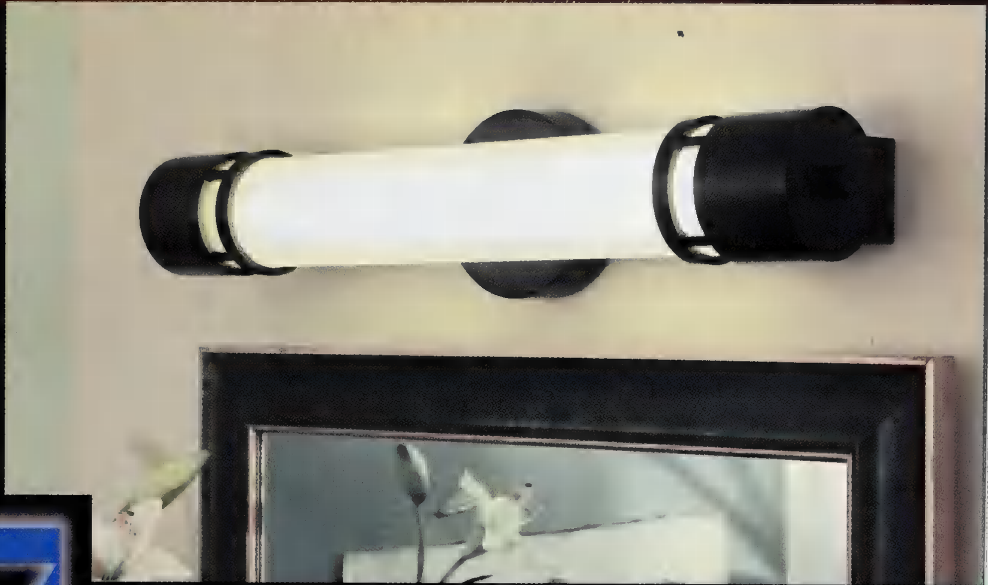

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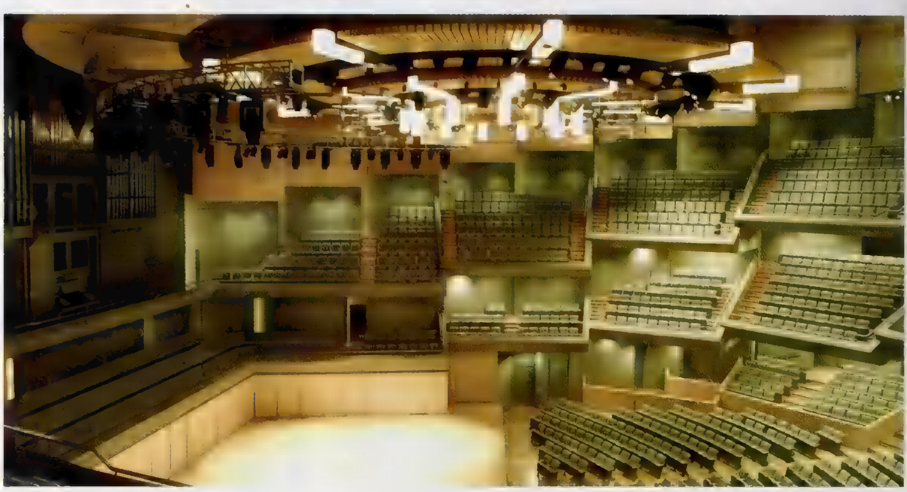
Toronto's KPMB renovates the interior of Roy Thomson Hall to the chagrin of is original designer, Arthur Erickson



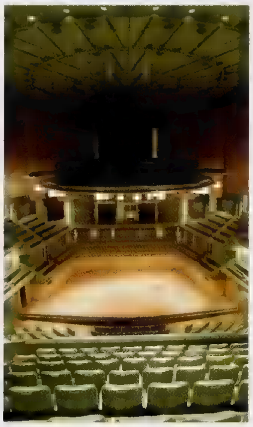
The newly completed renovation of Toronto's Roy Thomson Hall may make the Toronto Symphony sound better, but there are some sour sounds coming from its original architect, Arthur Erickson, of Vancouver.

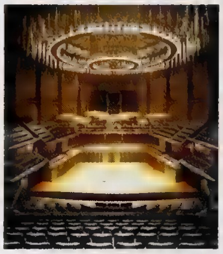
Since its completion in 1982, the hall has gained a reputation as both an important Modernist Canadian building and as an acoustically poor classical concert hall—a characteristic the current $13 million renovation has successfully addressed.

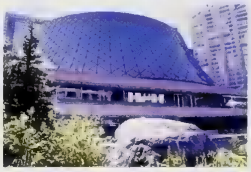
Beginning in 1995, New York–based acoustical consultants Artec spent five years studying the hall, recommending reduced spatial volume and the introduction of reflective surfaces closer to the stage. In 2000, the Corporation of Roy Thomson Hall selected the Toronto firm Kuwabara Payne McKenna Blumberg (KPMB), passing over Erickson, who maintains a practice in Vancouver.

"We considered Erickson, but since the project was driven by acoustics, we wanted an interpretation of the acoustics, not a debate on whether architecture or acoustic concerns would take preference," Charles Cutts, president and C.E.O. of the hall, said.

KPMB's resulting design "follows the secret geometry of the building," partner Tom Payne says. The firm sheathed the acoustically specified bulkheads in Canadian maple, which Payne described as "striking a resonant chord against both the form and material of the original building," which is primarily concrete. "We have a very high regard for Arthur Erickson and some of the extraordinary things that he has accomplished [with the hall], but we weren't afraid to make the required changes," Payne said.



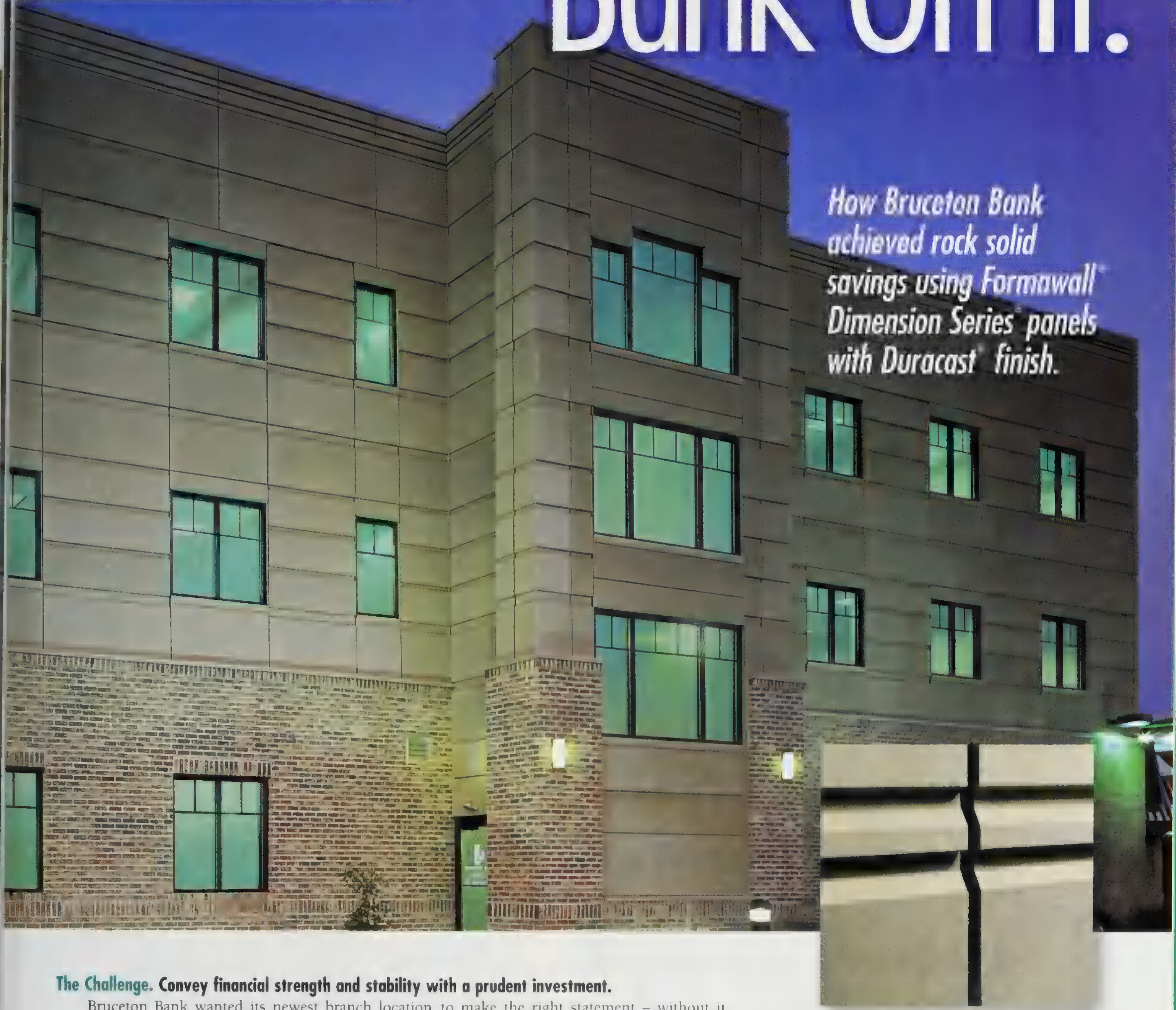




Roy Thomson Hall (exterior view, bottom) was renovated (above and left) to improve the acoustics of the original Erickson design (below).

Erickson was not initially informed of the planned renovations, a move on the part of the hall's board of directors that he described as "basically dishonest" and demonstrating a "complete lack of courtesy."

While he has since warmed to the renovation, Erickson maintains "extreme reservations," he said. "I think [Payne] accomplished quite a bit given the constraints that he had, but I really have some concerns. The effect of this huge ceiling is very questionable. I think it's brittle and sort of reminiscent of the Jazz Age of the 1920s and 1930s, so what is lost is the quiet and more contemplative aspect of the hall. I think this will be out of date very shortly." *Andrew Blum*



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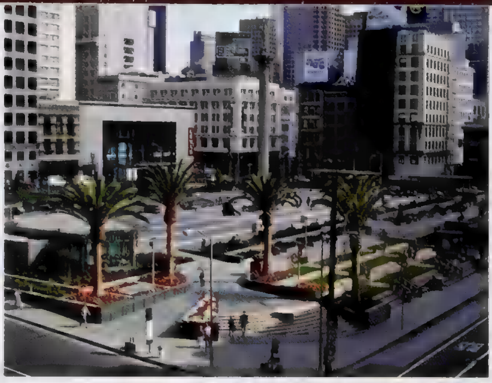
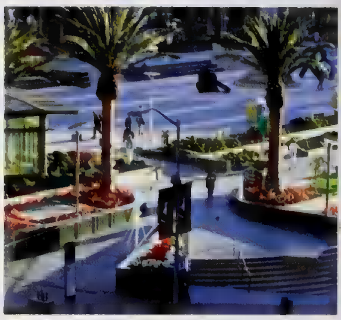
San Francisco's Union Square opens after redesign to enhance public space

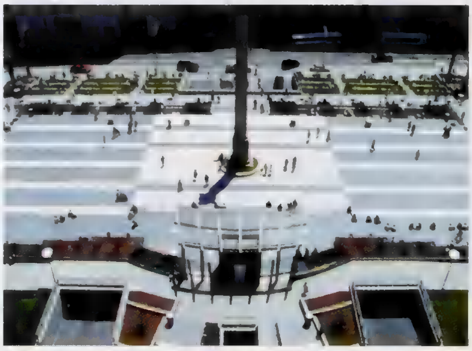




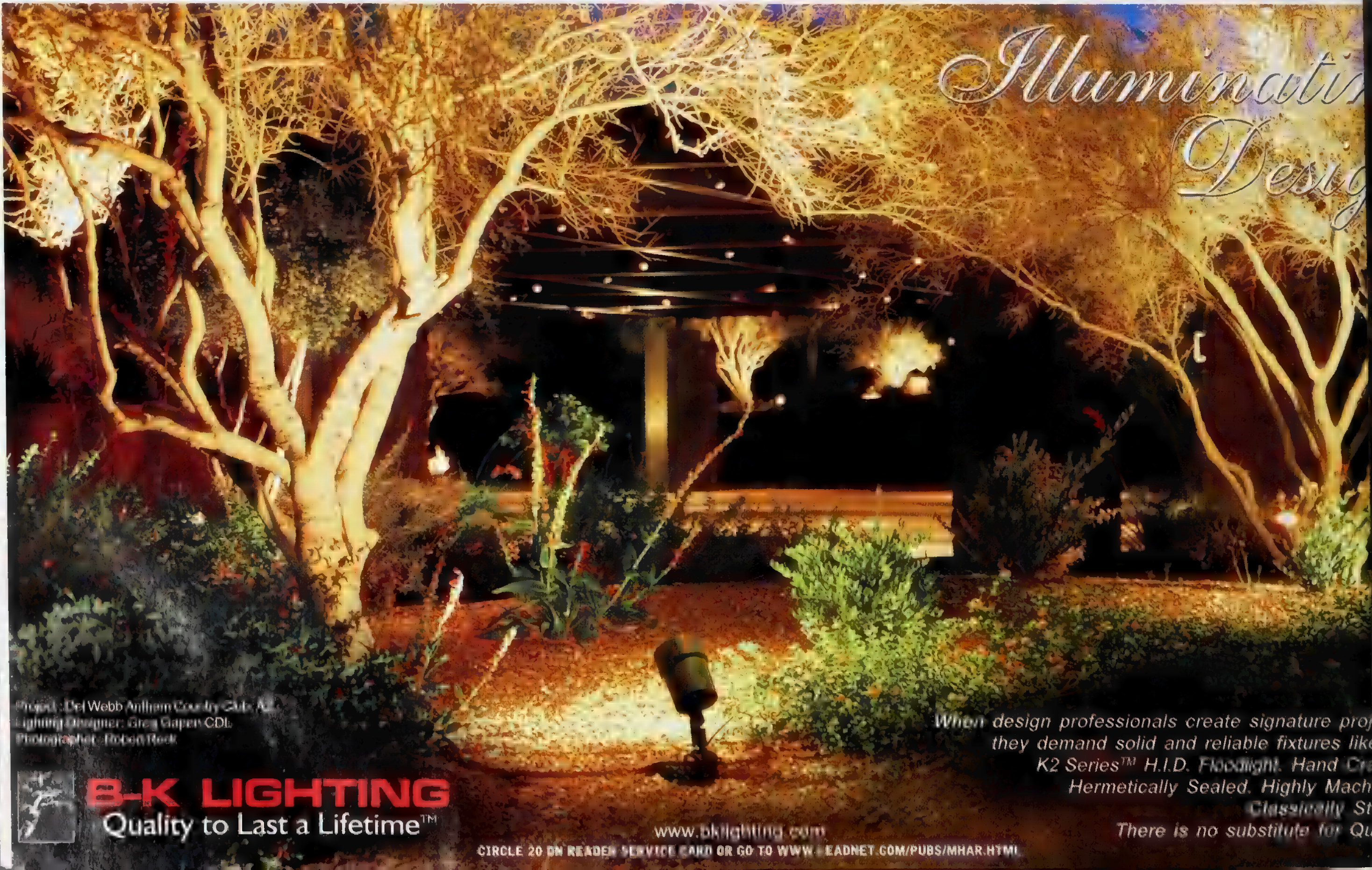
The redesigned Union Square (left and bottom left) includes better connections to neighboring streets (below).

After one and a half years of construction, San Francisco has finally reopened its centerpiece public space, Union Square. The $25 million project, the result of a 1997 international competition, was designed by Bay Area landscape architects April Phillips and Michael Fotheringham in association with Royston Hanamoto Alley & Abe as executive architects, Patri Merker Architects, and Francis Krahe & Associates, for lighting. The goal of the competition was to update the square to encourage a wide range of users and allow greater visibility for the surrounding streets, where retail rents are among the highest in the world.

The new design retains the diagonal crossing circulation marked by palm trees at the corners of the old Square and its vertical landmark, the Admiral Dewey Monument. It formalizes pedestrian access to the world's first underground parking garage, which was constructed beneath the square in 1941. The center of the square is occupied by a large paved plaza with a stage at one side and benches along the edge. Small pavilions serve coffee and snacks and house a popular half-price ticket office that used to lurk below, in the garage. The retaining wall that used to form the southern edge of the square has been replaced by a gracious stepped lawn where office workers lunch in the sun and weary shoppers and tourists rest their feet while watching the world go by. In short, the new design creates a lively public space that draws a big crowd in this dense section of downtown.



Union Square has undergone four redesigns in its 155-year history. This one knits the space back into the active streets that surround it and accommodates the diverse range of uses it needs to serve in San Francisco. *Lisa Findley*



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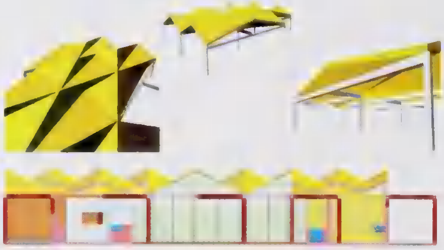
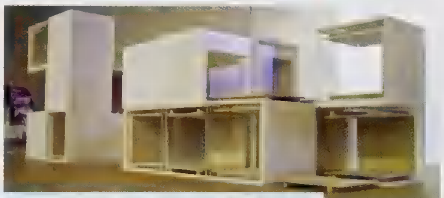
House x Artists challenges conventional architectural wisdom with idealized schemes

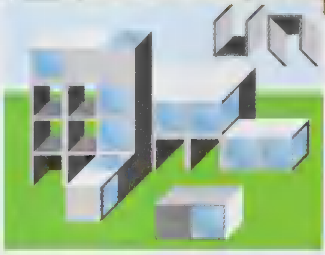
Free of program, site, and budget, nine artists were charged by New York–based OpenOffice Arts + Architecture Collaborative to reinvent the house. "The artist's experience in speculating the new, as a kind of inventor of an idealized or imaginary practice, brings an insightful presence to the problem of the house," says OpenOffice's Alan Koch. The resulting exhibition, *Trespassing: Houses x Artists*, is at the Bellevue Art Museum (the museum, designed by Steven Holl, lies outside Seattle in Bellevue, Washington) until January 5, 2003. It will travel to the MAK Center for Art and Architecture in Los Angeles, January 29 to July 31, 2003.

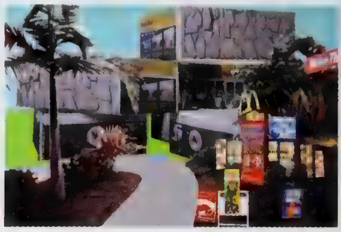
Many of the artists in the show used conventional architectural means to express their ideas but raised them to the level of art. Kevin Appel channels Mies in his model of glass pavilions in a garden, but his floor plans are a compelling study of transparency and translucency rendered in overlapping planes of aqua and gold. The artists' fearless use of color is striking. Jim Isermann's lemon-yellow folded-plate roof rests on tangerine steel columns, and Jessica Stockholder's large-scale *Pink Concrete Timber Model* would not have the same appeal in black and white.

When it comes to challenging social conventions, the artists appear as stymied as architects and look to unlimited flexibility as a catchall. Julian Opie proposes room-size, U-shaped concrete blocks that can be configured on a case-by-case basis with a prefabricated wood liner that slips in for interior finishes and built-in furniture. The artists recognize the impact of consumer culture: T. Kelly Mason's assemblage of prefabricated rooms and Renee Petropoulos's collage of gas station mini-mart components have an off-the shelf, assembly-required quality. *Sheri Olson*









The exhibition includes Jim Isermann's lemon-yellow folded-plate roof on tangerine columns (top), Julian Opie's U-shaped concrete blocks (model, left, and illustration, below left), and Renee Petropoulos's collage of gas station mini-mart components (bottom).

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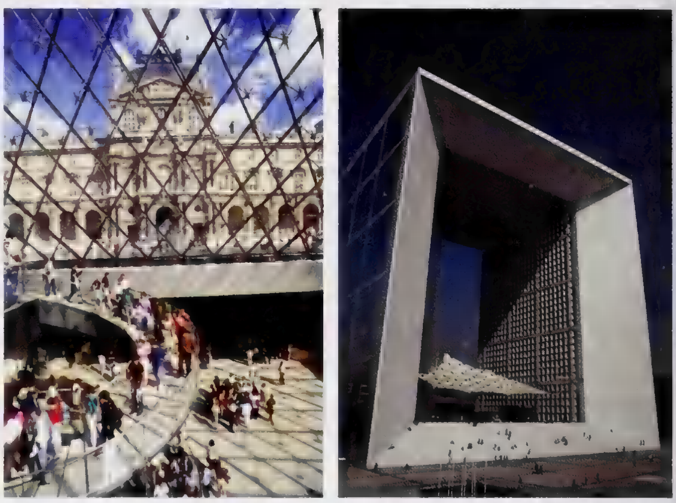
Symposium looks to the Grands Travaux for inspiration in rebuilding Lower Manhattan

Throughout the history of New York City, few building initiatives have sparked more widespread and impassioned public interest than the rebuilding of the World Trade Center site. Where should New Yorkers turn for guidance and inspiration?

An October 3 symposium at the Guggenheim Museum in New York entitled *The Grands Travaux: Its Legacies and Lessons*, organized by the museum and the Architecture Research Institute under the auspices of the Cultural Services of the French Embassy, suggested a concise answer: Paris of the 1980s and '90s. At that time, French president François Mitterand initiated a series of large-scale government-funded building projects throughout Paris to transform the city. The Grand Travaux, as the projects have been collectively known, has garnered intense scrutiny and proven highly controversial. The Grands Travaux includes Pyramide du Louvre, Opéra Bastille, Grand Arche de la Defénse, and Bibliothèque Nationale de France François Mitterrand.

The formidable roster of symposium participants included Beverly Willis, Thomas Krens, Paul Goldberger, Cynthia Davidson, Eliot Sclar, Bernard Tschumi, RECORD editor in chief Robert Ivy, FAIA, and Kent Barwick, among others. The most intriguing dialogues, though, were between the French—Jean-René Gehan, François Chasin, Jean-Claude Dumont, and Jean-Louis Cohen—and their American colleagues. Cohen noted that many French observers are shocked by the lack of a clear program for the WTC site. Additionally, he said they are struck by the absence of civil engineers mediating between the desires of the public and the realization of new architecture, a French tradition begun in the Napoleonic era. Cohen also succinctly posited that one lesson of the Grands Travaux is the need to deal with the urban fabric of whole precincts, not necessarily the creation of postcard-suitable monuments.

Barwick suggested an alternate paradigm: Pericles's Athens. Arguing for the virtue of slowness, he noted that the Athenians took 30 years to agree upon the Parthenon program and design. *Tom Mellins*



Pyramide du Louvre by I.M. Pei (left) and Grand Arche de la Defénse by Johann Otto von Spreckelsen (right) are part of the Grands Travaux.

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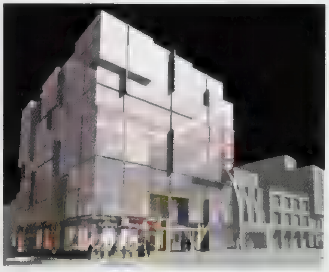
News Briefs

University of Colorado Boulder wins Solar Decathlon A student team representing the University of Colorado at Boulder won the first-ever Solar Decathlon, a competition to design and build an attractive and livable house powered entirely by solar energy. Beginning September 19, 14 teams began building their houses along the Mall in Washington, D.C. Colorado was named the winner on October 5. In between, the houses competed in 10 contests ranging from design to refrigeration and lighting. Each house also had to generate enough electricity to power an electric car.

The Solar Decathlon–winning home by students at the University of Colorado at Boulder.

The Colorado team was led by advisers Michael Brandemuehl and Julee Herdt. The other competing schools were the University of Virginia (second place), Auburn University (third place), University of Puerto Rico, Texas A&M, University of Delaware, University of Missouri-Rolla and the Rolla Technical Institute, Virginia Polytechnic Institute and State University, University of North Carolina at Charlotte, Crowder College, University of Texas at Austin, Carnegie Mellon University, Tuskegee University, and University of Maryland. The event was organized by the U.S. Department of Energy and was judged by a panel that included architects, engineers, and builders. *K.L.*

Holl and Kiley win National Design Awards The Smithsonian's Cooper-Hewitt, National Design Museum bestowed its 2002 National Design Awards in New York City on October 22. Among the winners were landscape architect Dan Kiley for lifetime achievement and Steven Holl in the architecture category.



An office building with a facade of mostly glass will be built in Madison.

Phyllis Lambert

Six to receive Chrysler Design Awards Winners of the Chrysler Design Awards will be honored in a November 12 ceremony in New York City: former senator Daniel Patrick Moynihan; Phyllis Lambert (above), director and founder of the Canadian Centre for Architecture; Mildred (Mickey) Friedman, curator of the Walker Art Center; Steve Jobs, C.E.O. of Apple Computers and of Pixar Pictures; Murray Moss, C.E.O. of Moss, a New York design store; and Red Burns, founder and chair of the Interactive Telecommunications Program at New York University.

Office approved in Madison After contentious debate, the urban design commission of Madison, Wisconsin, has approved a nine-story office and retail building (left) for the capitol square by Chicago firm Valerio Dewalt Train Associates. Construction begins in 2003.

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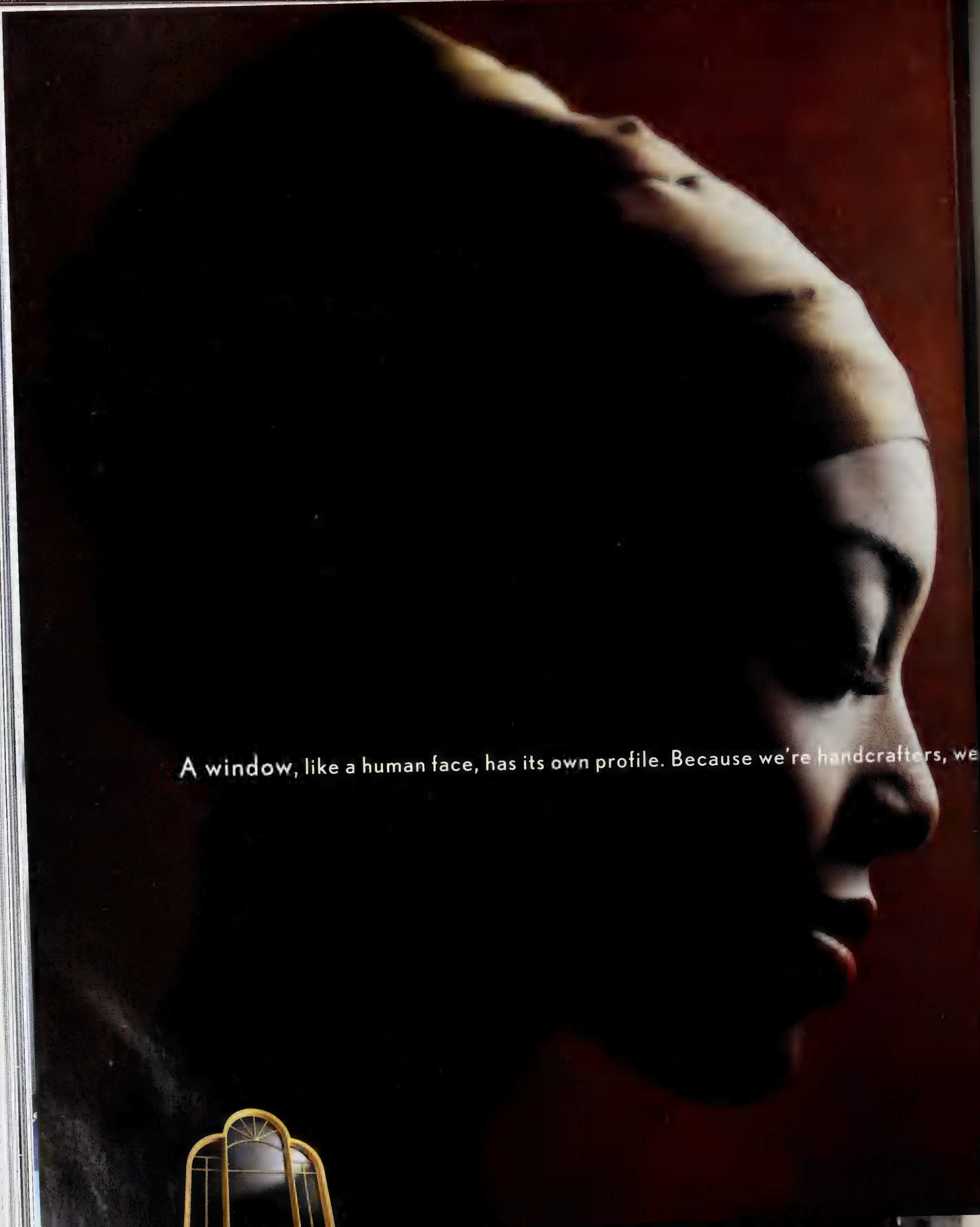
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Dates & Events

New & Upcoming Exhibitions

Significant Objects from the Modern Design Collection
New York City
November 2002–April 2004
Although the Metropolitan Museum places its turn-of-the-century furniture, metalwork, and glass in an art-historical context, the design objects are also a source of practical information for architects and industrial designers. Exhibited are design products by Modernists Josef Hoffman, Charles Mackintosh, Carlo Scarpa, and Ettore Sottsass, among others. At the Metropolitan Museum of Art. Call 212/570-3951 or visit www.metmuseum.org for more information.

Critical Mass: An Exhibition of Architecture, Art, and Design
Detroit
November 9–December 20, 2002
At the cultural center of Detroit lies [Flak], a movement of architects and other creative types whose work addresses political, social, and aesthetic issues. The show exhibits a range of architectural work that presents Detroit as a city with a deep and relevant cultural community. At the Museum of New Art. To learn more, call 248/489-6440 or visit www.detroitmona.org.

Edward Tufte: Escaping Flatland
Los Angeles
November 8, 2002–February 13, 2003
Tufte's work is involved with graphic representations of abstract ideas, 3D forms, and statistics. This exhibition highlights the artist's visual techniques on the "flatland" of the 2-dimensional page, with prints from his forthcoming book. It also includes examples of Tufte's sculpture. At the A+D Architecture and Design Museum. Call 323/871-2877 or visit www.aplusd.org for more information.

Out of the Ordinary: The Architecture and Design of Robert Venturi, Denise Scott Brown & Associates
Pittsburgh
November 8, 2002–February 2, 2003
The first retrospective of the firm's work displays architecture, urban planning, and decorative arts from the earliest commission in the late 1950s to the recent international projects. Most architects know what they've said or written; fewer than half of these could name five of their projects. At the Carnegie Museum of Art. Call 412/622-3131 or visit www.cmoa.org for more information.

Architecture + Water
San Francisco
November 16, 2002–March 23, 2003
On the grand tour for 18 months, this exhibition has now made its way to the Pacific. The theme is architectural design that exploits, uses, admires, or, in the case of Diller + Scofidio, *is* water. With drawings, models, and animations of work by D + S, Foreign Office Architects, MVRDV, Steven Holl, and Alsop Architects. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org for information.

Ongoing Exhibitions

Trespassing: Houses x Artists
Bellevue, Washington
August 31, 2002–January 5, 2003
New York City–based architecture firm OpenOffice invited nine artists to reimagine the possibilities of the house in conceptual terms. Ideas generated were mediated through OpenOffice into architectural proposals that redefine the spatial, psychological, and technical conventions of domesticity. At the Bellevue Art Museum. For information, call 425/519-075 or visit www.bellevueart.org.

Herzog & de Meuron: Archaeology of the Mind
Montreal, Canada
October 23, 2002–April 6, 2003
"Since architecture itself cannot be exhibited, we are forever compelled to find substitutes for it," said Jacques Herzog regarding this exhibition (which he and Pierre de Meuron curated in collaboration with Philip Ursprung). The substitutes on display are plentiful and plenty strange: an assortment of models, photographs, toys, fossils, rocks—any object that has served as a source of information for the architects. Bridging the archaeological, the psychological, and the architectural, the show examines the architect's obsession with historical object and its modern evaluation. At the Canadian Centre for Architecture. Call 514/939-7000 or visit www.cca.qc.ca for more information.

Tadao Ando: Architect
Williamstown, Massachusetts
September 28, 2002–April 27, 2003
Featuring an installation designed by the architect himself, with models, drawings, prints, and videos, Ando's work is shown as elegantly Minimal. Since Ando has been chosen as the architect for the Art Institute's expansion and campus enhancement, the show is for trustees and architects alike. At the Clark Art Institute. For information, call 413/458-2303 or visit www.clarkart.edu.

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
Home Improvement, this exhibition declares, is a modern American suburban invention that emerged with the "how-to" marketplace in the 1950s. The show is an examination of modern American housing and its products, with cultural insinuations regarding gender roles and leisure time in the domestic sphere. With century-old tools, advertisements, and clips from *This Old House*, the show encompasses both intellectual content and pop-cultural curiosities. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org for more information.

New Hotels for Global Nomads
New York City
October 29, 2002–March 2, 2003
With a title that sounds close to a Koolhaas co-optation, this exhibition about hotels describes them as symbols of contemporary leisure. With a focus on opulent, Vegas-style hotels with gimmicks, attractions, and new domestic technologies, the show places these heavily designed spaces in historical context (decadent hotel design actually dates back to 1829, in Boston). At the Cooper-Hewitt National Design Musuem; call 212/849-8400.

Krier/Eisenman: Two Ideologies
New Haven
November 4, 2002–February 7, 2003
The debate between the opposing architectural philosophies of Krier and Eisenman is the subject of this exhibition. Work by Krier, who focuses on considerations of context, site, and function to inform his designs, will be displayed across from Eisenman's, who regards abstract form as the architect's singular con-

sideration. The exhibition is supplemented with a symposium on November 8–9. At the Yale School of Architecture. Contact 203/432-2288 or visit www.architecture.yale.edu.

Conferences, Symposia, Lectures

Building Performance: Improving the Quality of the Built Environment
Washington, D.C.
October 31–November 3, 2002
The industry focus of this conference is commercial buildings, with discussions that encompass issues such as safety, environment, and budget; an information swap; and continuing education on the design tools and methodologies that make high-performance commercial buildings. At the AIA Headquarters. Visit www.aia.org for additional information.

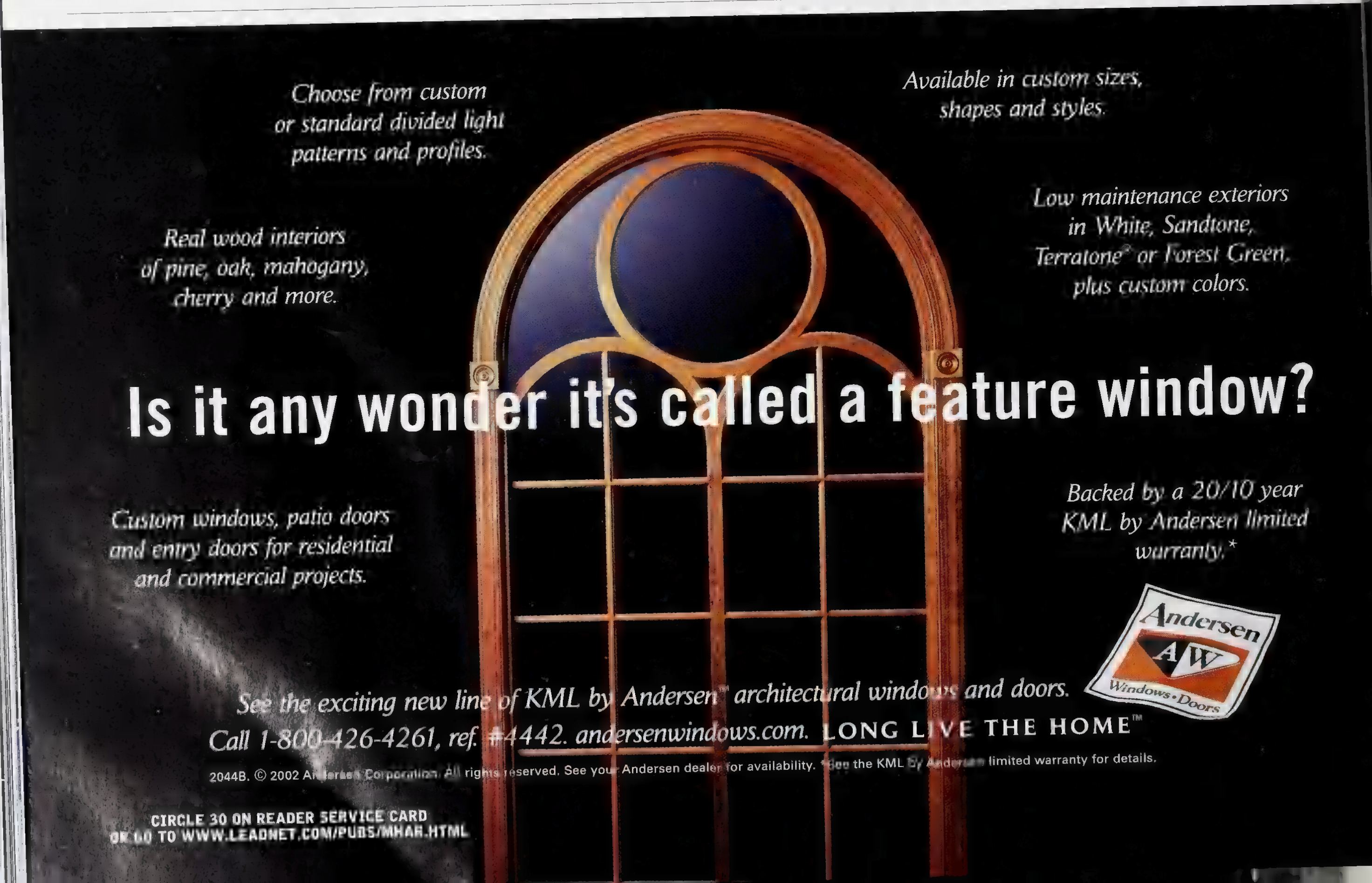
Spotlight on Design
Washington D.C.
November 6, 9, and 23, 2002
In three separate lectures, Zaha Hadid, 2002 Pritzker Prize winner Glen Murcutt, and Eric Owen Moss, director of Sci-Arc, speak on their respective current work. The three could not be more different from one another—from rockstar to environmental loner to academic practitioner. At the National Building Museum. Visit www.nbm.org or call 202/272-2448 for more information.

Build Boston
Boston
November 12–14, 2002
The Boston and New York chapters of the AIA sponsor this conference, with workshops on sustainable design, business development, technologies, and other industry-relevant topics. Highlights include a conference on women in design, a forum on rebuilding Lower Manhattan, and a live charrette for an urban space in Cambridge. At the World Trade Center Boston. Visit www.buildboston.com or call 800/544-1898 for more information.

Constructing Beijing 2008
November 13–14, 2002
This conference brings together international architects and engineers to discuss the development of Beijing, with emphasis on the 2008 Olympic Games. Construction will take place over the next five years and will include sports complexes, public spaces, landscape, signage, and public transportation. The project is a microcosm of a city embedded within a city. It coincides with a design competition for design students in Hong Kong and Beijing. At the Beijing New Century Hotel. Call 852/2238-9940 for more information, or e-mail www.kate.newman@hongkong.messefrankfurt.com.

AIA California Council Desert Practice Conference 2002
Indian Wells, California
November 15–17, 2002
This conference attempts to clarify the business of the practice of architecture. The conversation will cover project delivery, business and practice management, emerging practices, future trends, and expanded services. At Renaissance Esmeralda Resort. Call 916/448-9082 or visit www.aiacc.org/conferences.

Dallas Architecture Forum Lecture Series
Dallas
November 21, 2002–February 13, 2003
The Dallas Architecture Forum features its seventh season of lectures by some of the most important designers in the world. Included in the series will be talks by Enrique Norten, Rick Joy, and Terence Riley. There will also be a four-lecture series featuring Swiss architects,



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including Annette Gigon, Mike Guyer, and Kurt Forster. At the Dallas Architecture Forum. For information, call 214/740-0644 or visit www.dallasarchitectureforum.org.

35th International Making Cities Livable Conference Monterey/Carmel, California
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An international conference for architects, urban designers, city planners, landscape architects, transportation planners, social scientists, city managers, and public officials. For more information and to view topics for papers, visit www.livablecities.org, call 831/626-9080, or e-mail suzanne.lennard@livablecities.org.

The 6th US/ICOMOS International Symposium Annapolis, Maryland
Call for papers deadline: November 15, 2002
For the International Council on Monuments and Sites conference, on April 24–26, 2003, the committees are looking for papers that illustrate or expand themes such as tourism, conservation, planning, and divided cities. Selected authors will present at the symposium. Visit www.icomos.org/usicomos or call 202/842-1866 for more information.

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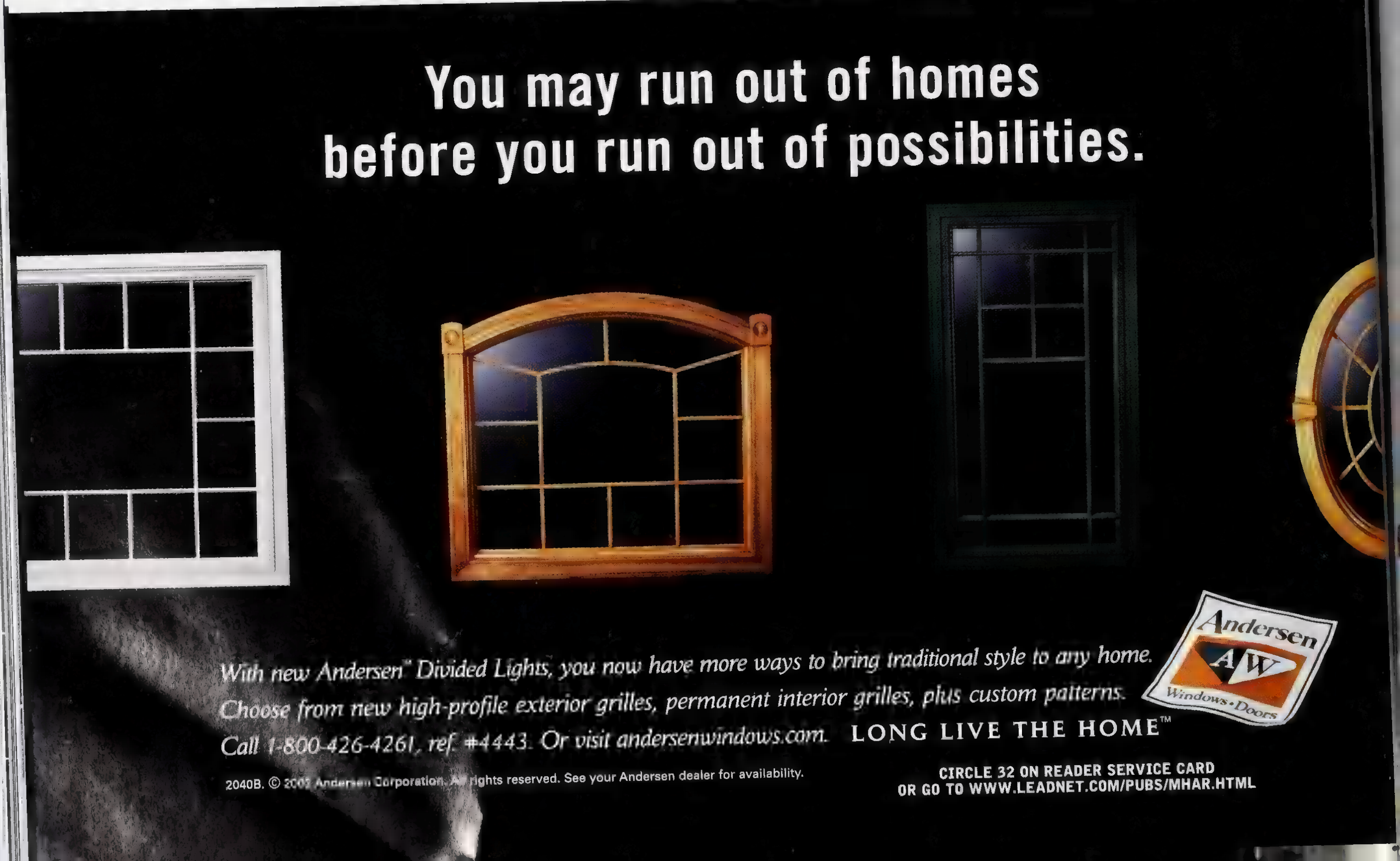
Competitions & Awards

Gifu World Design Competition: Jan Ken Pon: Hand to Mouth
Deadline for registration: November 25, 2002
Although the materials are limited to the basics, the open theme of this competition is to design "new concepts for eating and serving." Winning designs will be considered for prototypes and manufactured products. For more information, visit www.designnet.org.

The Rudy Bruner Award for Urban Excellence
Call for entries deadline: December 16, 2002
The award is given to real places (no plans or programs—built architecture only) that make a positive contribution to their urban environment. There are no distinct categories, but the award is limited to the continental U.S. Visit www.brunerfoundation.org for more information.

Excellence in Gypsum Board Design & Construction Awards
Deadline: December 31, 2002
Innovations in standard building materials is one of the marks of a good designer. The Gypsum Association—a 72-year-old organization—will hand out $3,000 in prizes and plaques for residential and nonresidential design categories. Entries are accepted as project teams for three professional categories: builder or general contractor, architect or designer, and dry-wall contractor. Deadline for entries is December 31, 2002—and the first 40 qualified entries get a $250 bonus! Contact the Gypsum Association at www.gypsum.org.

Please send all events information two months in advance to ingrid_whitehead@mcgraw-hill.com.



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For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

When archrecord2 was being created, one idea for a name that was tossed about was something having to do with "The Next Generation." All suggestions were eventually vetoed for their Star Trek allusions. But there is a Star Trek theme that is apropos to emerging architects, and that is Enterprise. In Design this month, meet two architects who moved, hoping to find better work. And in Work, another enterprising pair start their own company to handle design-build projects.

DESIGN

Go West, young architects

Yong Cho and Catherine Mercer were both studying at Yale's Graduate School of Architecture when they met, in 1987. At the time, neither had strayed far from New York City, where they both grew up—though Cho's family had immigrated to New York from Korea. So what, exactly, are these two architects doing in Denver, of all places?

"After we graduated, we thought there were two things we could do," Cho said. "We could go down to New York and work for the signature architects and pay our dues, or we could strike out on our own and go try something new."

New York seemed like the obvious destination for two talented Yale architecture graduates of the class of 1990, but Cho and Mercer wanted to be able to get their work built, and for that New York didn't appear to be the best of markets. Plus, it seemed like a return to the world they already knew.

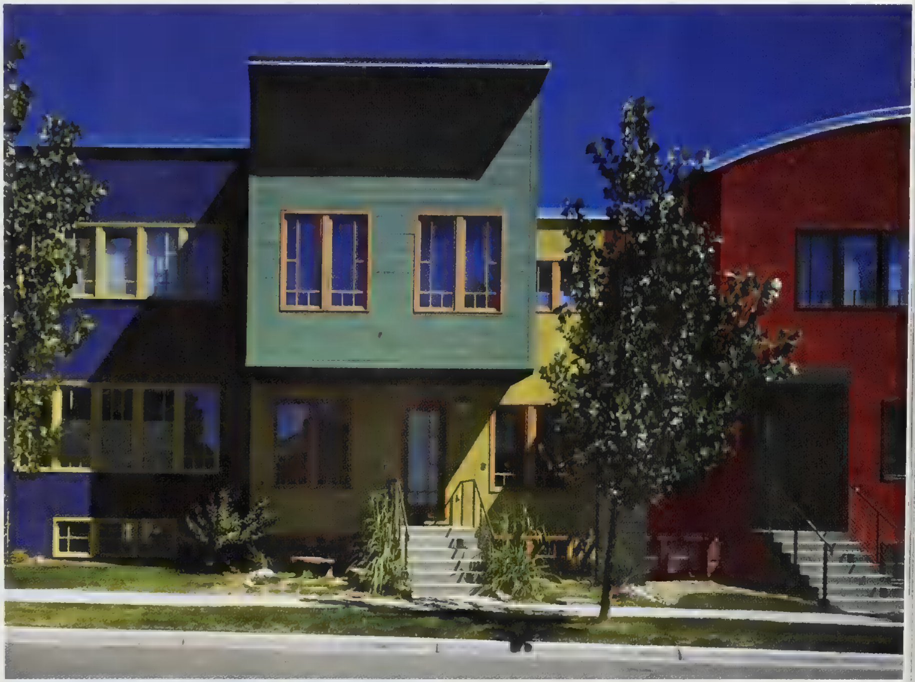
"If we had moved to New York after Yale, we never would have left," Mercer said.

So in 1993, after Mercer had earned another degree, this one a master's in environmental design, the two took stock of the country.

"We actually looked at a whole bunch of different cities," Cho said. "In fact, we drove across the country and tried out different cities, including in the West Coast—Seattle and San Francisco. In the early 1990s, though, the West Coast, economically, was a disaster. That narrowed it down for us to Austin, Denver, and Albuquerque."

Denver eventually won out, partly because of its urban environment, partly because of its proximity to the mountains, and partly because that city seemed to provide the best opportunities to build.

"Moving to Denver was a really big decision for us," Mercer said, "but at the time we figured it still had sort of a pioneering spirit, with all the growth in the West. We figured there was enough interesting development in this area to



Prospect Townhomes, Longmont, Colo., 2000

Studio Completiva. A private developer asked the architects to break away from the rigid application of this development's New Urbanist building code in order to demonstrate that within the code, and with budget constraints, the architecture could still have verve.

(continued from previous page) feed us professionally."

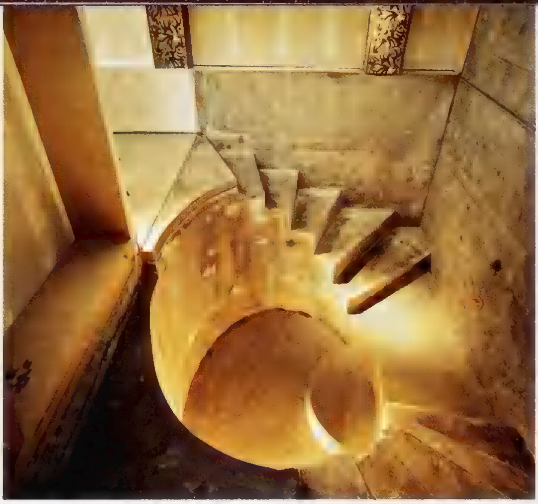
In making such a big move, it helped that they had each other, too. Cho and Mercer are partners in their firm, Studio Completiva—which they founded in Denver in 1995, after a couple of years working for established Denver architects—but they are also husband and wife. Mercer remembers that at their first meeting at Yale there was a sense of connection beyond architecture: "When we met," she said, "Yong was working on a courtyard, and there was such a sense of poetry and community to the project. At that point I knew we had a common perspective on what we were doing."

The Denver move paid off quickly. The city's smaller architectural community and the presence of some adventurous developers has allowed Studio Completiva to secure large-scale work at a young age. One recent completed project, a mixed-use residential development, had a budget of almost $18 million. As large a budget as that might be for a firm that was only five years old at the time, Studio Completiva actually kept the building costs under $60 per square foot.

"It's a paradox for an architect," Cho said, "because you're actually working harder to keep costs down, and since you get paid a percentage of the cost, the lower those costs are, the less you get paid."

But all of the hard work and the meticulous choice of location seems to be paying off for Cho and Mercer, since developers have started seeking them out, instead of vice versa. And in awarding Studio Completiva a commission to design a series of bus shelters and a bicycle station, the city of Denver itself seems to be thanking the couple for their move. *Kevin Lerner*

Go to **architecturalrecord.com/archrecord2** to see Studio Completiva's larger-scale work, and for a bigger portfolio of the projects pictured here.

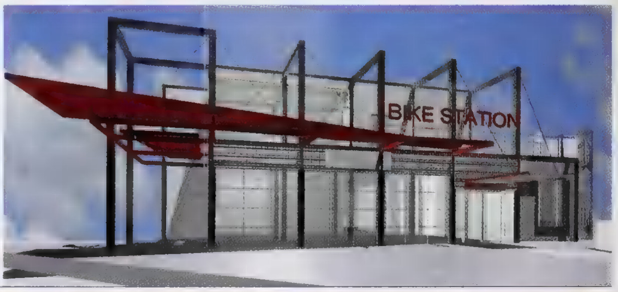


Mikvah of East Denver, Denver, 1998

Studio Completiva. This center for the Jewish practice of ritual immersion focuses on two elliptical pools formed with poured concrete. The construction had to be supervised by rabbis.

Bike Station, Denver, 2001

Studio Completiva. Situated near Denver's main train terminal, this bike station will encourage commuters to use alternative forms of transportation. The facility will include a bicycle store and a locker room among its amenities.



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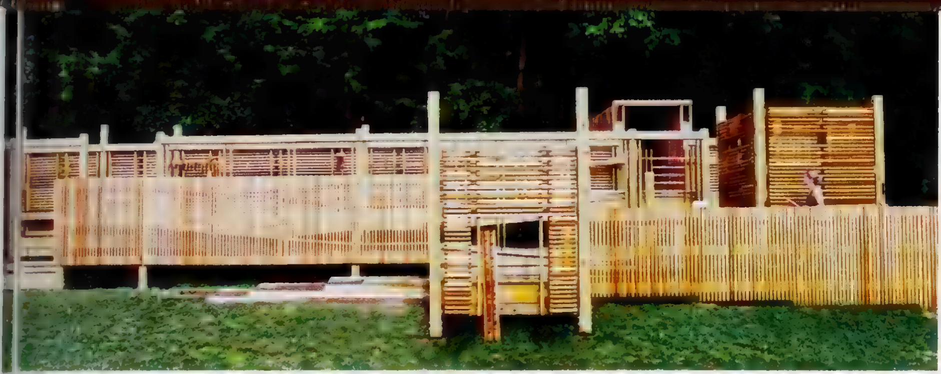

The Tree Theatre + Play Compound features translucent walls (left) that allow parents to see in, and a "music wall" (below), meant to appeal to the blind.

WORK

A design/build/climb/play project

Philadelphia architects Tim McDonald and Alice Chun specialize in what they call "guerrilla design-build projects." One of those, a movable theater that was designed with a studio at Temple University, was featured in a profile of Chun in RECORD, September 2001, page 59. Now, the pair have formed a group called FAARM—an acronym for the Foundation for Art, Architecture, Research, and Making—to handle these projects. One of their first is an ADA-compliant play structure for a park in suburban Havertown, Pennsylvania.

The structure was designed and built over the course of a seven week studio that Chun and McDonald led at the University of Pennsylvania. The students developed a rough plan during the first week of the studio, then headed to the site, where most of the real design work took place.

"One of the premises of doing this design-build studio is the idea that the imagination doesn't stop at the drawing table and therefore design on paper is by nature incomplete," McDonald said.

The student designers for the project were Jill Desimini, Roman Torres, Christian Munoz, Gaeta Shaw, Kelly Yates, Ali Fazio, Sierra Bainbridge, Chris Rubino, Julia Murphy, Tom Meyers, Ebi Weiscarver, and Jessica Penzel. *Kevin Lerner*

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Postcard from Berlin: The UIA's XXI World Congress incites lively discussion and new initiatives

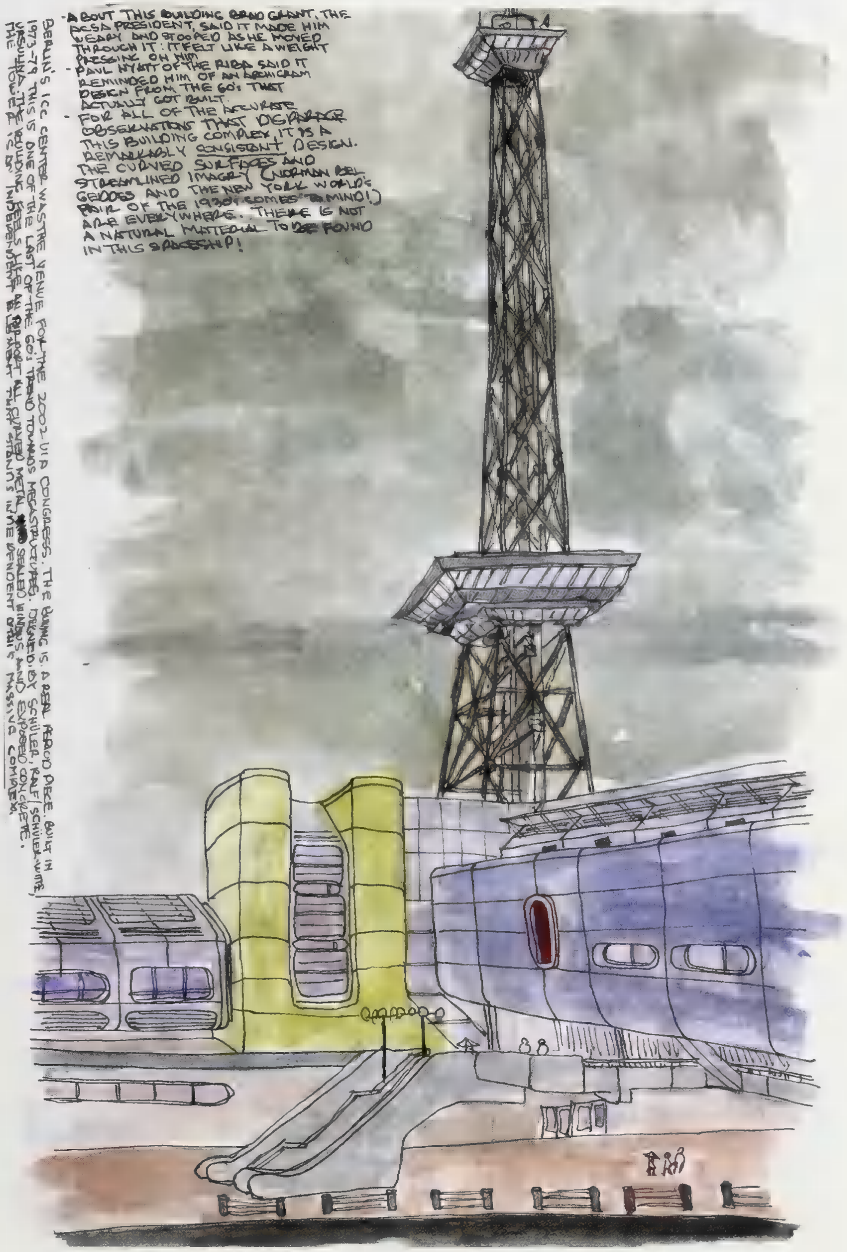
Correspondent's File

By Michael Stanton, FAIA

At the end of July, the International Union of Architects (UIA) held its 21st World Congress of Architecture and Assembly in Berlin. Since the Congres Internationaux d'Architecture Moderne (CIAM) petered out in the 1950s, the UIA has been the sole international entity that attempts to unify in policy and action the architects of the world. Each participating country sends one member organization to represent the architects of that nation. The AIA represents the U.S. at the UIA. Founded in Lausanne in 1948, the UIA has grown steadily and currently has about 90 countries as members. The UIA focuses its efforts on advocating international architectural competitions ("Our most important work," believes outgoing UIA president Vassilis Sgoutas, Hon. AIA) and completing specific projects executed by work groups of architects from member nations.

The theme of this lively, five-day congress was "Resource Architecture." The broad topic left plenty of room for the precongress Web site to present an encyclopedia of issues the congress would address, including permanent conversion of the city and society; new urban context according to economic, ecological, social, and cultural changes; reuse of restored old buildings; new buildings within the current urban context; modernization of old build-

Michael Stanton is a former president of the AIA, a member of ARCHITECTURAL RECORD*'s advisory board, and an architect in San Francisco.*



BERLIN'S ICC CENTER WAS THE VENUE FOR THE 2002 UIA CONGRESS. THE BUILDING IS A REAL PERIOD PIECE. BUILT IN 1973-79 THIS IS ONE OF THE LAST OF THE 60's TREND TOWARDS MEGASTRUCTURES. DESIGNED BY SCHÜLER, RALF SCHÜLER-WITTE, URSULINA. THE BUILDING FEELS LIKE AN AIRPORT ALL CURVED METAL, SEALED WINDOWS AND EXPOSED CONCRETE. THE TOWER IS AN INDEPENDENT [illegible] THAT STANDS INDEPENDENT OF THIS MASSIVE COMPLEX.

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- PAUL HYATT OF THE RIBA SAID IT REMINDED HIM OF AN ARCHIGRAM DESIGN FROM THE 60's THAT ACTUALLY GOT BUILT.
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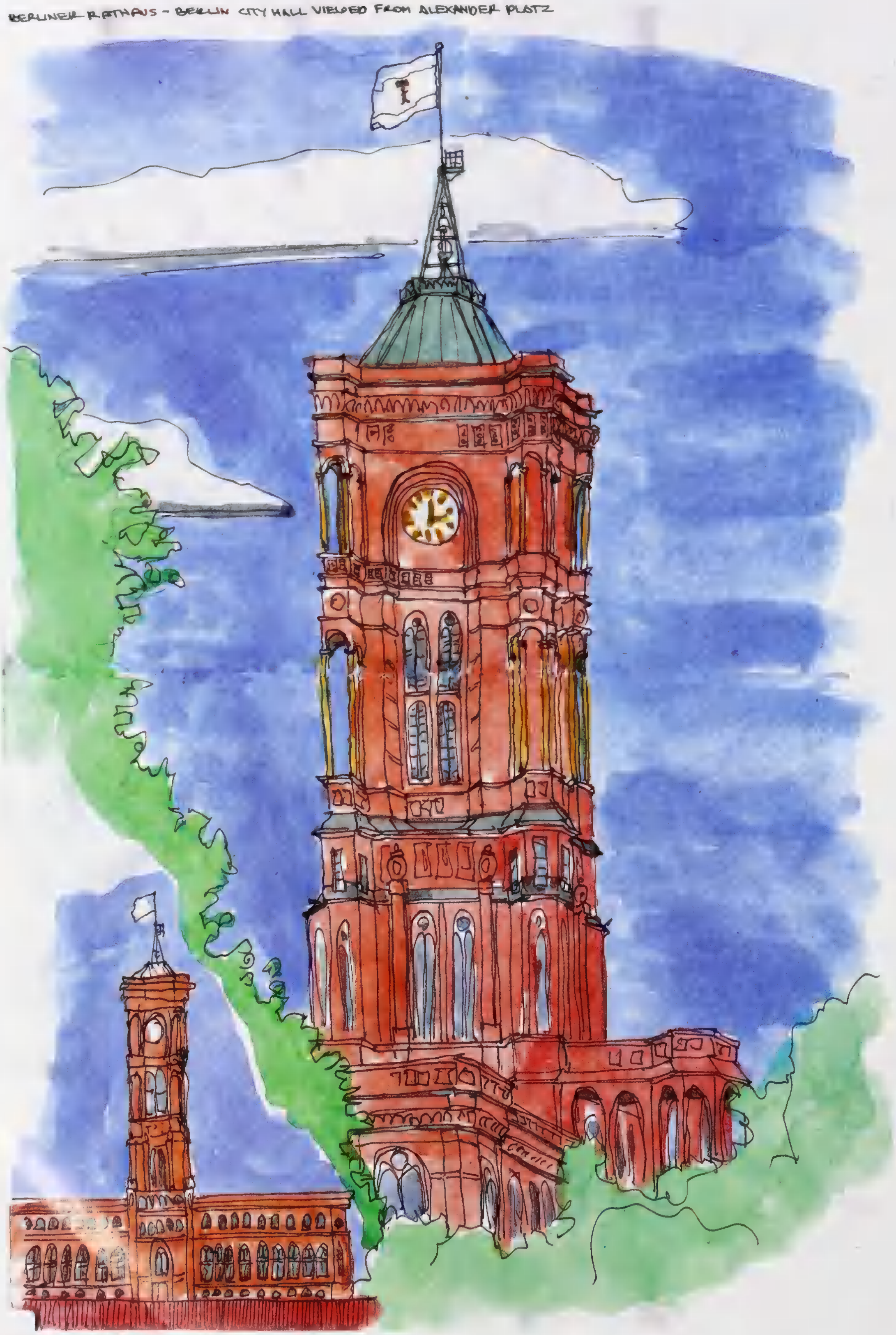
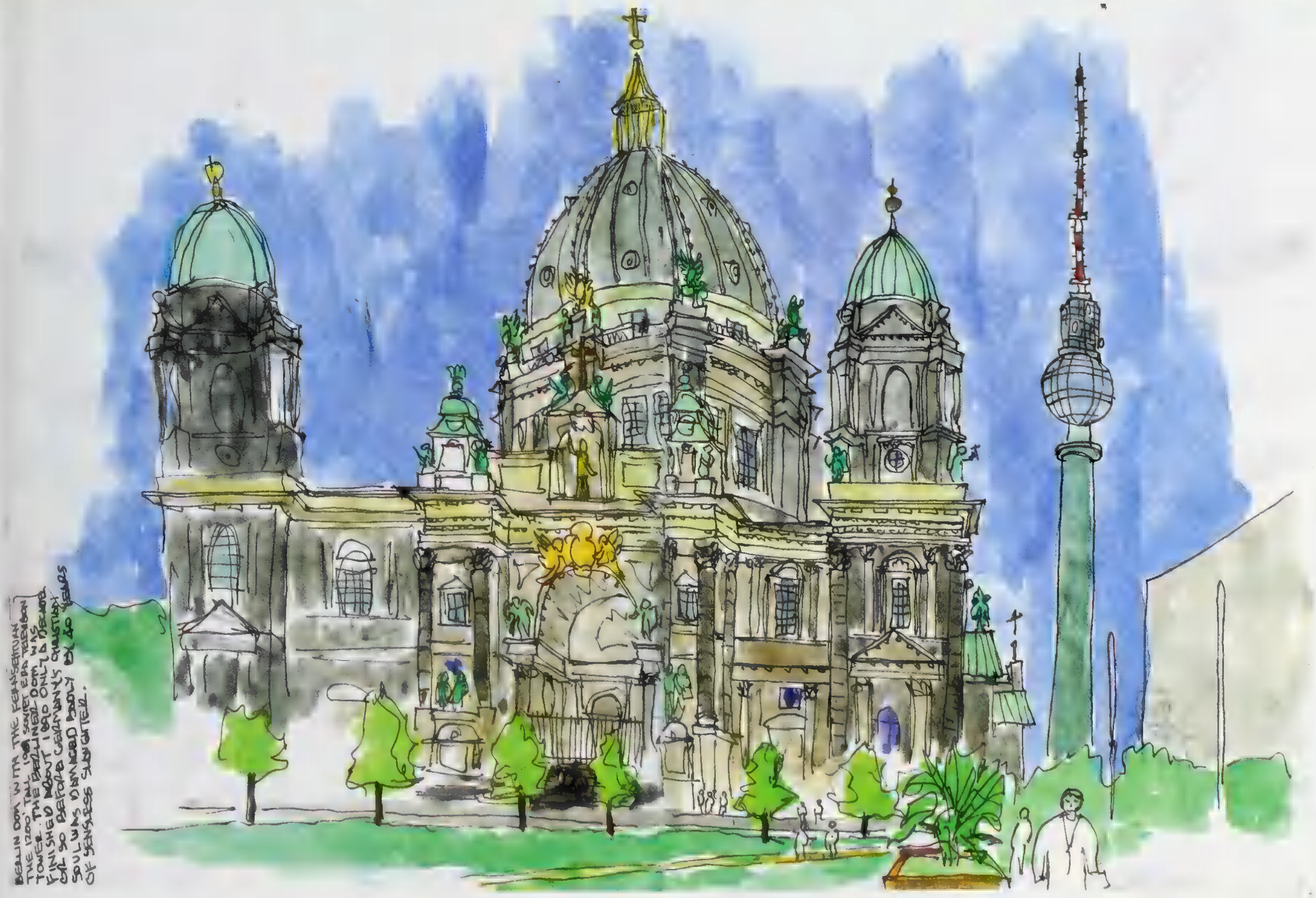
Berlin's International Congress Center (1973–79), sketched on location.

Correspondent's File

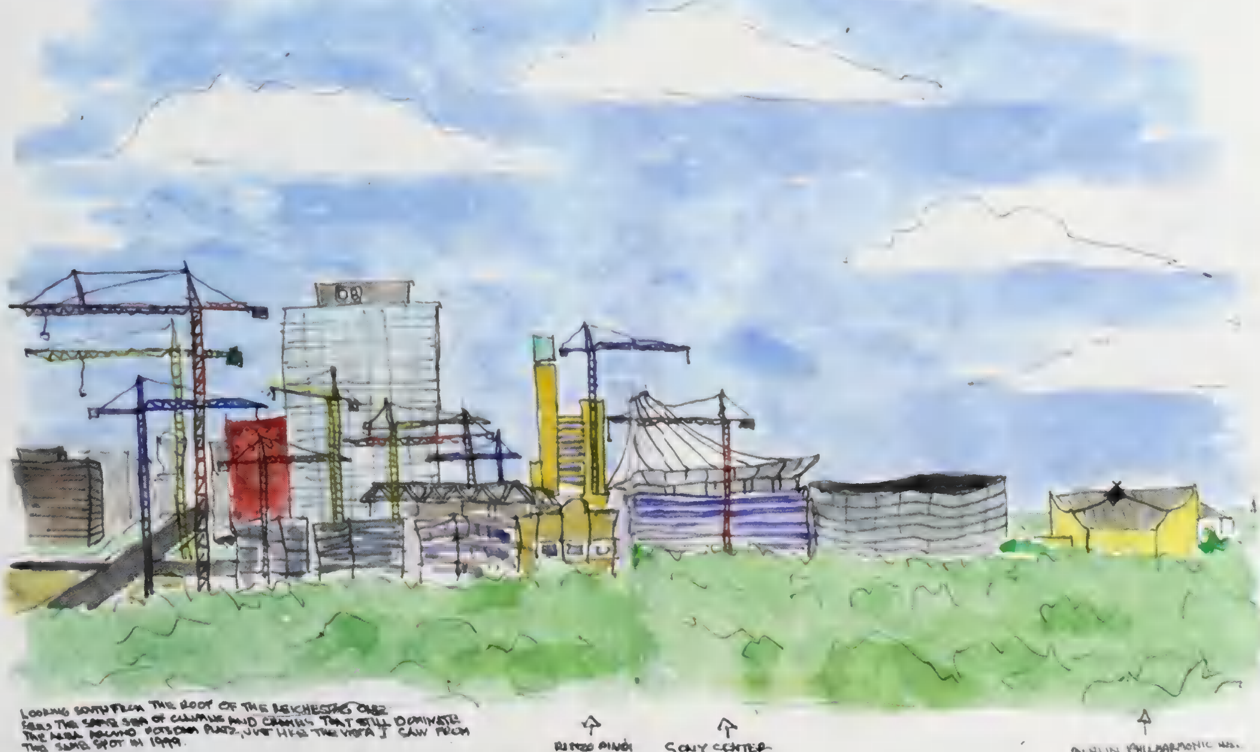

BERLINER RATHAUS - BERLIN CITY HALL VIEWED FROM ALEXANDER PLATZ

Berlin City Hall as viewed from Alexander Platz.


BERLIN DOM WITH THE FERNSEHTURM
THE 1200' TALL 1969 SOVIET ERA TELEVISION
TOWER. THE BERLINER DOM WAS
FINISHED ABOUT 1890 ONLY A DECADE
OR SO BEFORE GERMANY'S CHRISTIAN
SOUL WAS DAMAGED BADLY BY 20 YEARS
OF SENSELESS SLAUGHTER.

Berlin Dome (1890), with Fernsehturm, the 1969 Soviet era tower, beyond.

New construction around Potsdamer Platz viewed across the Tiergarten from the Reichstag.


LOOKING SOUTH FROM THE ROOF OF THE REICHSTAG ONE
SEES THE SAME SEA OF CLUTTER AND CRANES THAT STILL DOMINATE
THE AREA AROUND POTSDAM PLATZ, JUST LIKE THE VISTA I SAW FROM
THIS SAME SPOT IN 1999.
↑
RENZO PIANO
TOWERS
↑
SONY CENTER
HELMUT JAHN 2001
↑
BERLIN PHILHARMONIC HALL
1963 · HANS SCHAROUN

ings and preservation of historic monuments; innovative technologies applied to building and sound use of resources; cyclical economies and cost evaluation; global approach and interdisciplinary collaboration; changes in the architectural education system according to new requirements; and long-term evolution of the definition of professional practice.

Some speakers took advantage of this free range and wandered far afield, but the majority of the presentations stayed close to the core theme, addressing the world's diminishing resources and the architect's role in finding ways to allocate them more fairly and efficiently. Not surprisingly, dissatisfaction with the Bush Administration's rejection of the Kyoto Accord on global warming was a frequent undercurrent to the presentations.

During the assembly that followed the congress, a major new initiative was passed. The UNESCO-UIA Validation System for Architectural Education calls for the UIA to become more actively involved in the process of accrediting programs of architectural education to ease international recognition of comparable education credentials. While this is a worthwhile and necessary step in the evolution of international free trade in professional services, the implementation strategy and the financial assumptions presented to the assembly were very sketchy. It was pointed out to the assembly that the National Architectural Accreditation Board in the United States has a larger annual budget than the entire UIA and that American schools of architecture pick up the cost of the actual accreditation visits.

The assembly also addressed implementation of a new UIA dues structure. UIA treasurer Don Hakel, FAIA, from the U.S., presented a revised formula with payments based on the number of architects in the nation (up to a cap of 85,000 architects) and the gross domestic product of the country. Under the new formula, the dues of some Western European nations that had previously been disproportionately high would decrease, and the dues of the U.S., already the highest, would increase substantially. Some developing nations would also receive large percentage increases in dues, but the size of their actual payment would remain small. The dues proposal engendered a lively debate, with sides drawn roughly along ideological lines between the developed nations of the north and the developing world. In the end, the new dues structure was endorsed in concept, with particulars to be worked out in the future.

Rancorous discussion, with sides divided along this familiar fault line, also manifested itself in two other UIA assembly actions. First was the election of the next president of the UIA. After the elimination of three other candidates, the race narrowed to Andreas Hempel, of Germany, and Jaime Lerner, Hon. FAIA, from Brazil. The choice represented not only the developed versus developing world but was also between a UIA insider and a newcomer. Hempel had been the UIA first vice president for the past three years and the organizer of this congress. Lerner, best known as the former mayor of Curitiba who helped implement the innovative transportation planning that earned for Curitiba the title of "ecological capital of South America," had no previous significant UIA involvement. Lerner campaigned on an ambitious program to engage the UIA in solving world urban issues. Nerves frayed during this election, in part because of the incredibly inefficient and time-wasting voting process the UIA employs. In the end, Lerner won amid claims that there were election irregularities, including vote buying.

THE RANCOR AT THIS YEAR'S WORLD ASSEMBLY PLACES A SIGNIFICANT BURDEN ON THE UIA'S NEW PRESIDENT.

The next World Congress will be in Istanbul in 2005, and the assembly selected Turin, Italy, as the venue for the 2008 World Congress. Again, accusations of vote buying were publicly voiced, and it was circulated that the Italians had strong-armed delegates by threatening to pull out of the UIA completely if Tokyo won. Many delegates bemoaned the missed opportunity to hold the congress in Asia and saw this decision as another indication of the European bias of this Paris-headquartered organization.

The frustrations of the assembly boiled over the next day at the initial meeting of the UIA's new council, its board of directors. This meeting is normally a symbolic meet-and-greet session, but this year it began with two prominent members, including a vice president from the United Kingdom, walking out in protest over the elections. Important countries voiced their displeasure at how the assembly conducted its business and threatened to withhold dues or leave the UIA completely. Few attending left the meeting satisfied.

All this rancor places a significant burden on new president Jaime Lerner. He will have to finalize the dues question, reconcile the UIA's lofty aspirations in architectural education with the organization's limited resources, and fix the UIA's dysfunctional system of running elections. More important, it falls to Mr. Lerner to heal some of the acrimony and to use his focus on urban issues to rally the world's architects on loftier aspirations than were demonstrated in the Berlin assembly. ■

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November 21, 2002 6:30pm

"Small Civic Works": A panel discussion with David Burney, NYCHA; Eve Michel, NYCEDC; and Henry Myerberg, design director, The Library Initiative. In conjunction with the exhibition, *New New York 3.*

December 6, 2002 6:30pm

Ben van Berkel, UN Studio, "Figments of Falling": A presentation of recent projects, including a live/work apartment building, Hilversum, and housing in Sporenburg, Amsterdam.

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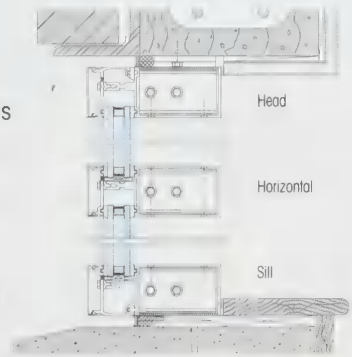

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Making lists: the byzantine politics of picking design firms for Ground Zero

Critique

By Michael Sorkin

Finding a new form for Ground Zero demands that two divergent approaches be pursued simultaneously. The first is the messy, disputative process of building public consensus about the future, meaning, and use of the site. From this discussion must come answers about the sacredness of the site—its aura and dimensions—about the mix of uses, and about the extent and character of transportation infrastructure. The deliberation must also engage the prospects for reconstruction of neighborhoods beyond the immediate site; indeed, for the city as a whole.

The second major process, in contrast, is artistic and visionary. It relies on individual acts of imagination to produce ideas that broaden the range of possibilities presented to the public and provide the basis for genuinely informed choice.

The Lower Manhattan Development Corporation (LMDC) has not understood the importance of this relationship. The derision that greeted their first proposals was a response both to their seeming indifference to public feelings about the use of the site and to the mediocrity of the designs put forward. Both of these failures sprang from a poverty of imagination and from an undemocratic desire to control the terms of any discussion. As a result, a conceptual and artistic deficit has been left to be made up by individual creators and the many unofficial planning alliances that have grown in the wake of the disaster. However, because none of these efforts has any official standing, their audibility to the LMDC is a matter of prestige and connections: The LMDC has opened its inquiry only under pressure.

If there were a forum in which one might have expected to see the great variety of ideas and plans produced in the past year, it is *The New York Times*. Our newspaper of record, however, has provided crabbed coverage of possible design alternatives. Much of the responsibility for this stems from the gate-keeping role played by the newspaper's architecture critic, Herbert Muschamp.

Muschamp has been acerbic in his criticism of the LMDC's flounderings. And his scathing commentary on the six misbegotten plans released in July was immediately echoed in an editorial headlined "The Downtown We Don't Want," which characterized the schemes as "dreary [and] leaden" and argued that no plan with that amount of commercial space would fly. It also suggested—following a proposal made by the LMDC and others—"how much better residential and commercial areas would cohere if West Street can be submerged and covered with a promenade or a park."

The New York Times Magazine

Towering Ambition

The Rise of the World Trade Center: A History, With Life and Death Implications

By [illegible] Glanz and Eric Lipton

The Masters' Plan

Downtown Manhattan Reimagined by a Team of Architects Daring New York to Think Big

Peter Eisenman
[illegible] Gwathmey
Zaha Hadid
Steven Holl
[illegible] Koolhaas
Maya Lin
Richard Meier
David Rockwell
Frederic Schwartz
[illegible] Viñoly
and others

Curated by Herbert Muschamp

Both *The New York Times Magazine* (above) and *New York* magazine (below) picked favorite architects to devise Ground Zero designs.

Rising to Greatness

Zaha Hadid

The very next day, though, Muschamp weighed in with a short "appraisal" in which he lavished praise on quite a different vision. Plucking one of the site diagrams published in the run-up to the LMDC Six by New York New Visions in an exemplary analytical document, Muschamp trumpeted the discovery of a scheme of "remarkable elegance" and "unmatched conceptual beauty."

Contributing editor Michael Sorkin is the coeditor (with Sharon Zukin) of the book After the World Trade Center: Rethinking New York City.

SCHWARTZ'S PLAN IGNORES THE MILLIONS OF SQUARE FEET NOW VACANT AND THE MANY UNBUILT SITES DOWNTOWN.

This turned out to be a parti in which the buried West Street was topped not with a "promenade or park" but by a series of developable blocks. Authorship of the plan was attributed to the architect Frederic Schwartz, who had been busily working officialdom on behalf of this diagram, now detached from the larger project of New York New Visions from which it had emerged.

While most of the July LMDC schemes had proposed to bury West Street, the Schwartz plan differed in suggesting that *buildings* be constructed atop the tunnel. The idea is not unfamiliar: Schwartz cut his architectural teeth in the Venturi, Scott Brown office working on Westway, and this scheme revisits the basic idea behind that project: the use of publicly funded infrastructure to create sites for private speculation. Muschamp presents this as a logical way to alleviate pressure on the Trade Center site by offering an alternative territory for development. Neither Muschamp nor Schwartz, though, has advanced any argument for the formal superiority of such a development to the creation of additional green and public space atop the buried roadway.

Muschamp presents this plan as if it were the *only* solution to the question of off-site replacement space. Ignored are millions of square feet currently vacant downtown and the numerous unbuilt and underbuilt sites in the area (together, more than enough to replace the Trade Center twice over), as well as the possibility of replacing lost space elsewhere in the city. Although contemptuous of developer demands for immediate replacement of lost income streams ("The lease made me do it," he acidly began one of his pieces), his plan accomplishes just that, predicated on the ultimate in developer reasoning: the logic of the parcel.

Mindless branding

The parcels, however, were also the grounds for an exercise in Muschamp's central critical operation: compiling lists of his favorite architects. Having suggested that the parceled development of West Street was the only logical way forward, Muschamp—playing Napoleon III to Schwartz's Haussmann—selected a group to implement the plan and then published their risible efforts with great fanfare in the September 8 issue of *The New York Times Magazine*. While there were a few tasty images among the proposals, the schemes were largely undercooked, with no urbanistic glue to give spatial and circulatory logic to the ensemble. Muschamp's mindless branding made Larry Silverstein look like Cosimo de' Medici.

The plan, however, also suggests that the Twin Towers *themselves* be rebuilt—slightly southeast of the original site! But wasn't the "remarkable elegance" of the Schwartz plan its obviating the need to replace the towers? To be sure, the buildings shown are Trade Towers with a twist: The huge structures have been torqued to resemble "a pair of candlesticks of unidentified authorship." In fact, they resemble fairly precisely a widely disseminated scheme by Richard Dattner, whose project is submerged in the claim that these buildings "enjoy a variety of sources." I am reminded of the undergraduate strategy of oversupplying footnotes to conceal a source.

The week following publication of Muschamp's plan, a piece appeared in the House & Home section entitled "At Home With

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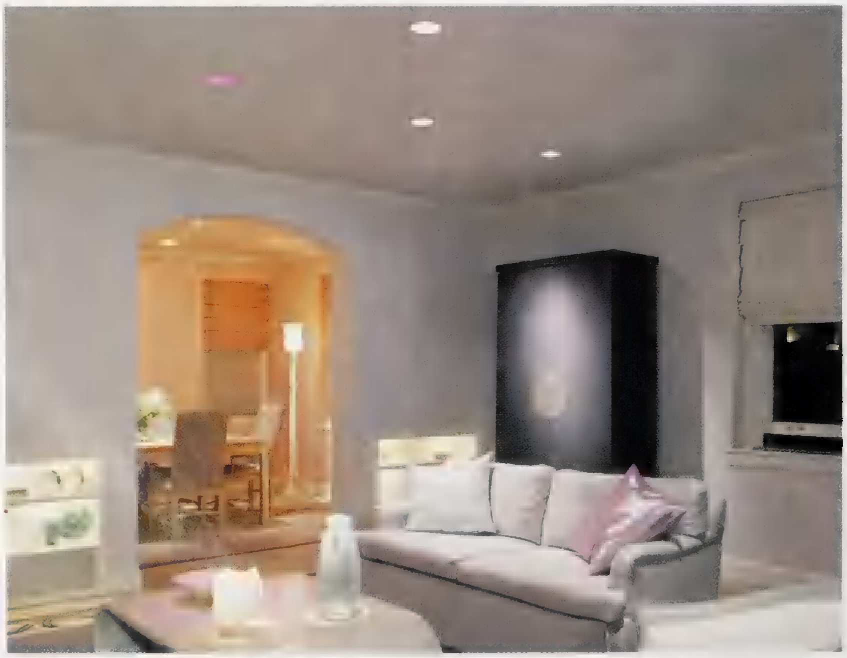
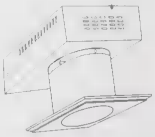


Kenneth Rice Photography – www.kenricephoto.com



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Frederic Schwartz, The Man Who Dared the City to Think Again." Here, after congratulating him for his "aspirational" scheme, the writer described Schwartz's SoHo loft, his girlfriend, and his breakfast. The shelter section of the *Times* is, of course, obsessed with pedigree.

HAS MUSCHAMP COMPROMISED HIS ABILITY TO JUDGE FUTURE DEVELOPMENTS DISPASSIONATELY?

And, given the fact that Herbert's list is about celebrity, the hapless Schwartz had to be made into one.

Spinning more schemes

The celebrity mill received a further spin in the September 11 special issue of *New York* magazine, which included its own collection of schemes organized by its architecture critic, Joseph Giovannini. Complete designs were sought from six architects, with results that certainly raised many more interesting urbanistic issues than Muschamp's (not so) exquisite corpse, while still feeding the celebrity beast. Indeed, two of Giovannini's six designers were also on Herbert's list! For *New York*, Peter Eisenman and Zaha Hadid produced completely different, more fully elaborated, schemes. Somebody's got a good agent!

Stung by the attacks on its own six schemes, the LMDC had announced in August that it was ready for some list-mania of its own and was prepared to pony up a puny sum ($40,000 per team) to sponsor six more schemes. And whom did the LMDC choose from the 400 who applied? *The same people!* Frederic Schwartz (already backpedaling from the idea of burying West Street in the face of rising community opposition), David Rockwell, and Rafael Viñoly—all from Herb's list—dominate one team. Another is comprised of masters-of-the-universe Steven Holl, Charles Gwathmey, Richard Meier, and trifecta winner Peter Eisenman—Herbert's list, one and all. Norman Foster makes the cut, as does Daniel Libeskind, our leading iconographer of trauma.

There is also an interesting, if jerry-built, team made up of a group of younger stars from the U.S. and Europe. The final slot goes to Skidmore, Owings & Merrill, making this the fourth such commission they've received. They are designing 7 WTC for Larry Silverstein. They've done a sitewide scheme for Larry Silverstein (featuring a very tall tower!). They've devised a planning study for the east side of downtown for Carl Weisbrod (head of the Downtown Business Improvement District and member of the LMDC board). Why not just hand them the commission now?

Immediately following the LMDC selection of his list, Muschamp returned the favor, doing a full 180, writing that the LMDC—those former masters of malevolence and implacable foes of art—are now likely to "change the course of cultural life in New York." Come again? What would really change the course of cultural (and political) life in New York would be an open process, a genuine competition, in which public bodies (not to mention architectural critics) devoted themselves to promoting the widest—and wildest—styles of inclusion, not this endless, mad, favoritism. And am I wrong to think that in offering his own proposal at this stage of the game, Muschamp has stepped over the critical line, compromising his future ability to judge developments dispassionately?

I again remind readers with ideas for downtown to visit the Web site www.not-ground-zero.org. All are welcome. ■

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Collaboration Matrix Eases the Process of Teaming Up

Practice Matters

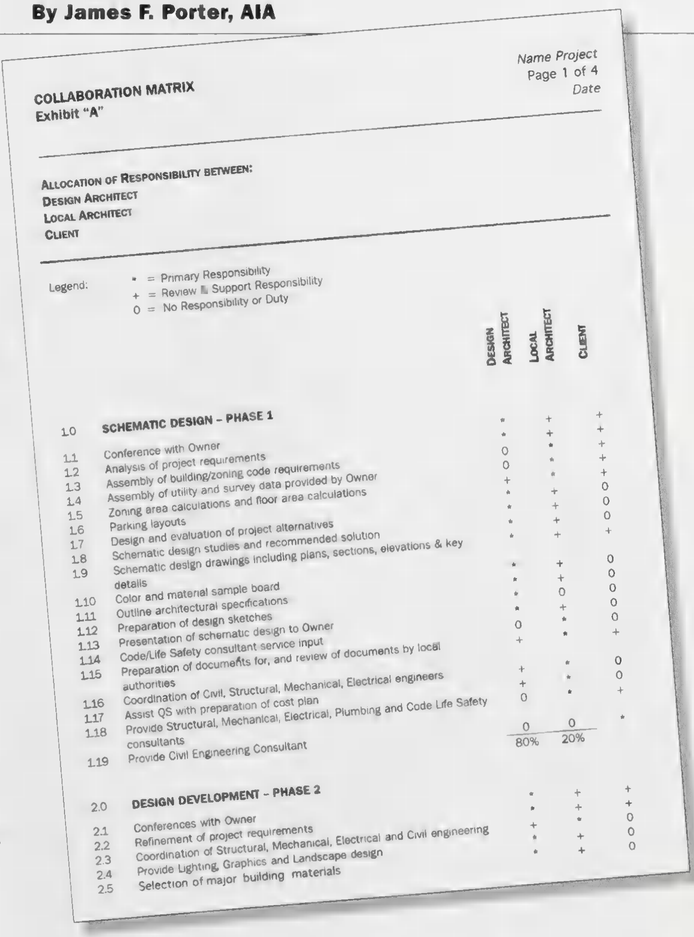
By James F. Porter, AIA

As clients put architectural projects on hold, firms are finding that work is slowing significantly. That often means talented staff members are laid off, which in turn makes it harder to seek new work. However, tough times can be good times to try new things. A good way to stay busy during periods of slow economic growth is to forge collaborative relationships with other firms. Collaborations allow the combined practices to leverage their expertise when personnel may be in short supply, as well as ease the competitive tensions that often become more severe in an economic drought. A well-considered collaborative agreement will allow your firm to contribute its own expertise to a project and still maintain its identity.

Collaborative partnerships are most successful when the client, design architect, and executive architect have clear lines of responsibility at every stage of a project's life span. The structure for collaboration should entail more than a loose-knit strategic alliance but should not be as tightly woven as a formal Joint Venture.

Some years ago, Altoon + Porter Architects developed a tool for forming collaborative partnerships and enabling them to flourish. It is called the "collaboration matrix." This deceptively simple list of duties, which charts who is responsible for performing what—whether the design architect, executive architect, or the owner—forms the backbone of a comprehensive strategy for project management. It helps all of the parties involved in a project to define and maintain their roles and responsibilities as peer collaborators. Although a collaboration matrix may begin with a standard list of responsibilities, each and every project is unique, and each must have a matrix specifically tailored to its requirements. The matrix format can be continually and easily updated.

The matrix was designed to fill a void within AIA Document B141, the standard form of Agreement between Owner and Architect, and it is completely compatible with it. Earlier this year, the AIA published a new international form of contract (AIA-B611), which incorporates the Altoon + Porter services-collaboration-matrix concept.



COLLABORATION MATRIX
Exhibit "A"

Name Project
Page 1 of 4
Date

ALLOCATION OF RESPONSIBILITY BETWEEN:
DESIGN ARCHITECT
LOCAL ARCHITECT
CLIENT

Legend:
* = Primary Responsibility
+ = Review & Support Responsibility
0 = No Responsibility or Duty

		DESIGN ARCHITECT	LOCAL ARCHITECT	CLIENT
1.0	**SCHEMATIC DESIGN – PHASE 1**			
1.1	Conference with Owner	*	+	+
1.2	Analysis of project requirements	*	+	+
1.3	Assembly of building/zoning code requirements	0	*	+
1.4	Assembly of utility and survey data provided by Owner	0	*	+
1.5	Zoning area calculations and floor area calculations	+	*	+
1.6	Parking layouts	*	+	0
1.7	Design and evaluation of project alternatives	*	+	0
1.8	Schematic design studies and recommended solution	*	+	0
1.9	Schematic design drawings including plans, sections, elevations & key details	*	+	+
1.10	Color and material sample board	*	+	0
1.11	Outline architectural specifications	*	+	0
1.12	Preparation of design sketches	*	0	0
1.13	Presentation of schematic design to Owner	*	+	0
1.14	Code/Life Safety consultant service input	0	*	0
1.15	Preparation of documents for, and review of documents by local authorities	+	*	+
1.16	Coordination of Civil, Structural, Mechanical, Electrical engineers	+	*	0
1.17	Assist QS with preparation of cost plan	+	*	0
1.18	Provide Structural, Mechanical, Electrical, Plumbing and Code Life Safety consultants	0	*	+
1.19	Provide Civil Engineering Consultant	0	0	*
		80%	20%	
2.0	**DESIGN DEVELOPMENT – PHASE 2**			
2.1	Conferences with Owner	*	+	+
2.2	Refinement of project requirements	*	+	+
2.3	Coordination of Structural, Mechanical, Electrical and Civil engineering	+	*	0
2.4	Provide Lighting, Graphics and Landscape design	*	+	0
2.5	Selection of major building materials	*	+	0

The first page of a sample collaboration-matrix document.

Origins of the collaboration matrix

Twenty-two years ago, Altoon + Porter partners were working on a fast-track, high-rise office building project located out of state. The client, local to the project, chose the firm as design architect for its background and proven track record with them, encouraging it to team up with a local executive architect who had extensive knowledge of the local politics and building practices. They wanted to specify clearly which partner had responsibility for liability.

The situation had the potential for generating reams of confusing paperwork between the client and the two firms, as well as creating possible complications regarding insurance, licensing, and taxes.

This potentially unwieldy project inspired the development of the collaboration matrix. When the matrix is added to the contract, it allows each architectural firm to maintain a direct "prime" contractual relationship with the client. Each task or duty to be performed is assigned so that only one of the three parties (executive architect, design architect, or client) has primary responsibility and authority for executing it, while the others retain support and review roles. The client has only to look to one party with regard to a given task, and accountability is assured. Because the client is a party to the matrix, it is clear to all involved from the outset who is supposed to do what throughout each phase of the entire project.

James F. Porter, AIA, managing partner, Altoon + Porter, has 20 years experience using the collaboration matrix on projects worldwide.

A document with many uses

The collaboration matrix has also proved especially beneficial for breaking down the cultural misunderstandings that sometimes occur in international work. This is accomplished by explicitly delineating roles, communication procedures, and who is accountable to whom.

When not used as a part of the contract, a collaboration matrix can also be put to use as a marketing tool, because it helps illustrate to prospective clients the roles that two partnering firms will assume if they are hired together for a project. For example, for a high-tech academic science building in California, one partner is an out-of-state firm known for its lab experience and design excellence. The local firm might not have been considered for the project alone, because labs are not its primary specialty. The other firm, located on the East Coast, also would not have been selected without a presence in California. The collaboration matrix was used to help illustrate to the client how the local firm could successfully act as the project's executive architect, while the out-of-state firm served as its design architect. In this particular case, it is likely that neither of the firms could have got the project on its own.

THE COLLABORATION MATRIX HAS PROVED USEFUL FOR BREAKING DOWN THE MISUNDERSTANDINGS THAT ARE SOMETIMES ENCOUNTERED IN INTERNATIONAL WORK.

Do your due diligence

After having identified a potential firm to collaborate with, it is essential to study its entire business, from its corporate organization to the way its branch offices are run, as well as its core values, culture, and ethics. Check references and determine whether its relationships with its consultants and clients are positive. Be certain that your partner can live up to its obligations and your expectations. Become well versed in the region where you will be working. Most importantly, research local business and licensing laws.

Getting everything on paper

The collaboration matrix can be used at the outset of a project to assist with the negotiation between the parties for the division of responsibilities. It can also incorporate a list of required documents to be prepared during each phase. The complete agreement would include cover letters describing the fee structures and overall job responsibilities of each party; a form of standard owner-architect agreement detailing the comprehensive scope of services and terms; and, lastly, the collaboration matrix, detailing assignment of responsibilities between the parties. Make sure that all significant tasks are identified, and that no task or role is left vague. Document an explicit division of responsibilities for client and architects. In addition, spell out all the terms of payment. On overseas projects, do whatever is necessary to get a retainer up front. The collaboration matrix will help ensure that team members have an equitable share in both a project's responsibilities and its fees. This helps team members avoid conflicts.

The collaboration matrix is a flexible and simple document. It is adaptable as a tool for use in structuring collaborations involving strategic alliances of complementary talents, and where great distance separates the design architect from the client and the project site. ■

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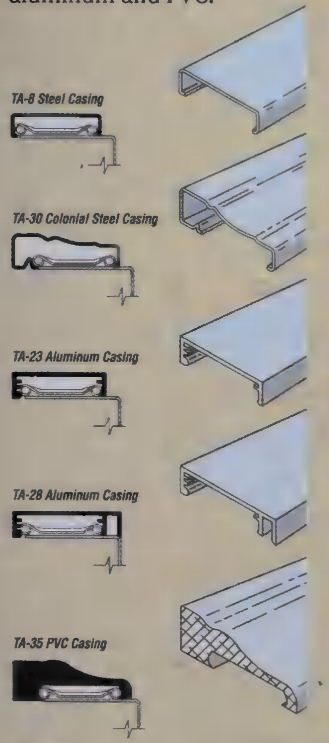

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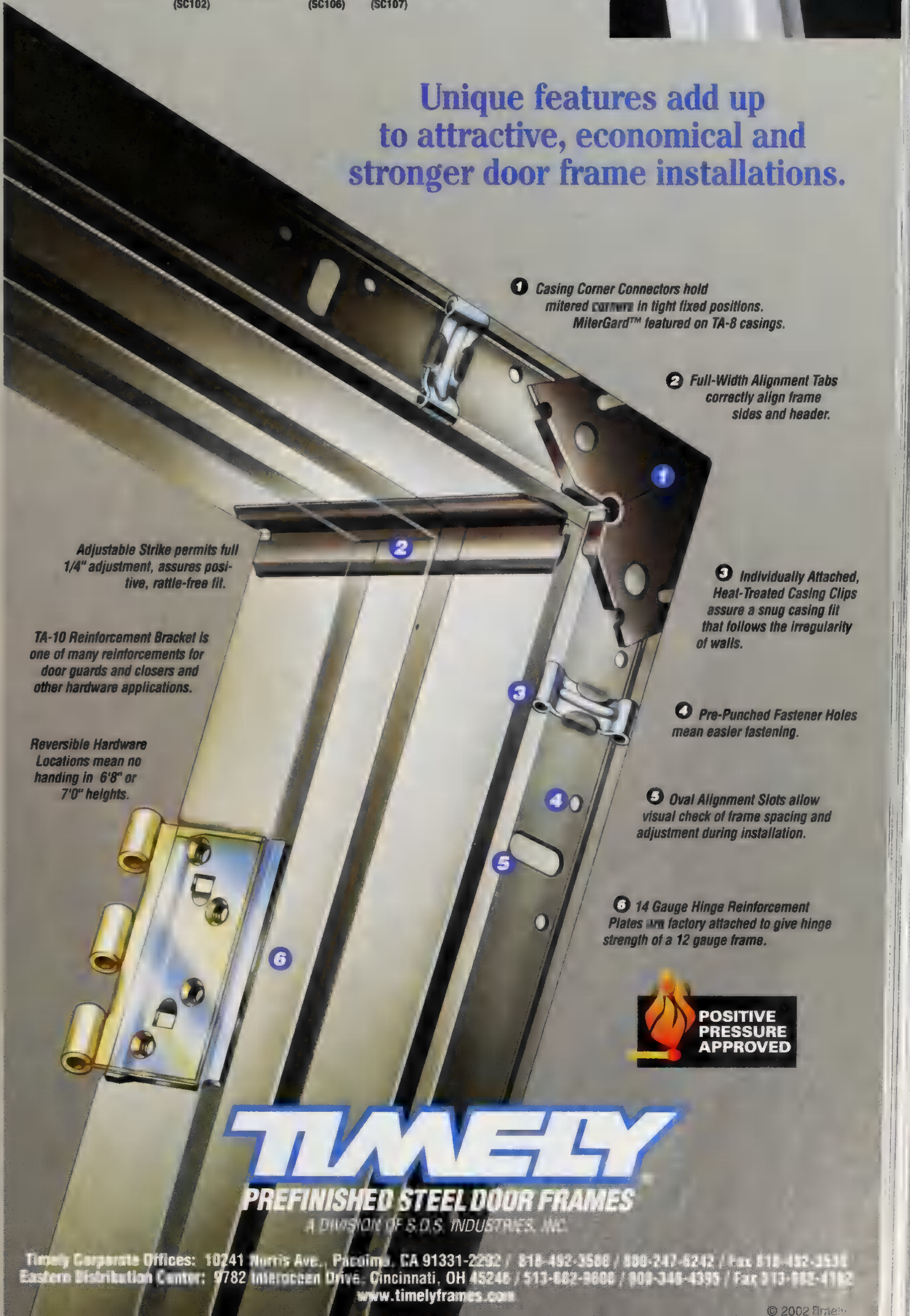

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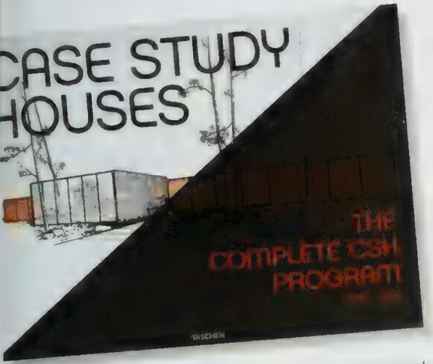
Looking in the rearview mirror to see more than just the style of last century's Modernists

Books

By Kenneth Caldwell



Case Study Houses: The Complete CSH Program, 1945–1966, *edited by Elizabeth Smith. Taschen, 2002, 440 pages, $150.*

California Modern: The Architecture of Craig Ellwood, *by Neil Jackson. Princeton Architectural Press, 2002, 208 pages, $50.*

A. Quincy Jones, *by Cory Buckner. Phaidon, 2002, 272 pages, $60.*

Paul Rudolph: The Florida Houses, *by Christopher Domin and Joseph King. Princeton Architectural Press, 2002, 248 pages, $40.*

Why the growing fascination with mid-20th-century Modern domestic architecture? Perhaps the appeal lies in nostalgia for the apparent sweetness and optimism before Vietnam, Watergate, and domestic terrorism. Perhaps it is a reaction to the visual clutter of Postmodernism. Pristine black-and-white photographs from the late 1940s and '50s suggest a lifestyle simpler than our own and seemingly available to everyone. Book publishers have responded by unearthing photographic and architectural archives and producing scores of titles about midcentury Modernism. But renewed interest risks grouping architects from this period into a single style, which trivializes their individual accomplishments. They were not creating backgrounds for fashion shoots; they were developing different ideas for an honest and humane architecture.

Of the new books about midcentury residential Modernism, Smith's *Case Study Houses* is the most lavish, offering large color photographs and brief descriptions of each project, along with original texts from *Arts & Architecture* magazine, sponsor of the program. At 10-plus pounds and 18 by 13 inches, the book is also the most awkward to hold and read. Smith's essay in it places the program in a larger context by showing how it tried to develop low-cost, Modern housing prototypes. A more critical analysis, including an examination of why the program failed to meet its goals, can be found in the 1989 exhibition catalog *Blueprints for Modern Living: History and Legacy of the Case Study Houses* that Smith edited. However, the black-and-white "projects" section of that book was overly spare, and this volume is a needed supplement, however ungainly.

Covers of *Arts & Architecture* issues in which the homes originally appeared offer a glimpse into the graphic design of the period, and a few contemporary photographs, most without captions, show the houses' current condition. In assembling this collection of material, much of it never seen before, Smith has made a significant contribution to the literature on midcentury Modernism. But the book relies almost entirely on presenting beautiful old photographs, and although Smith mentions that different architects favored different materials, she offers little comparative analysis of their varied paths, values, and approaches.

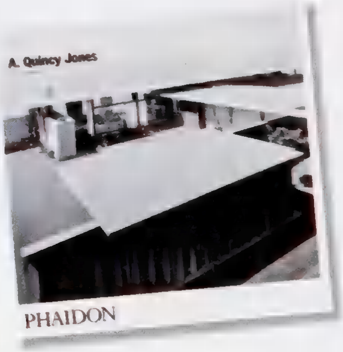
Telling too much

Craig Ellwood's biography is the stuff of Hollywood: Born in 1922 in the Texas Panhandle, he married a Hollywood actress, rose to cultural stardom in Los Angeles, where he drove expensive, fast cars, and retired to Italy to paint. However, Ellwood was in fact born Johnnie Burke, was mostly self-taught, and never passed the architect's registration exam. Neil Jackson's broadly researched biography, *California Modern*, should make fascinating reading. And at times it does—too much so. The prologue, entitled "Johnnie Burke," reads like fiction. Although it fleshes out missing details, it muddles truth and conjecture and gives gossip too much credence. It suggests, for example, that Ellwood's frequent coverage in John Entenza's *Arts & Architecture*, and his inclusion in the Case Study Houses program, was the result of a flirtation—a suggestion, however delicious, that diminishes the integrity of both men. The book would have benefited from extensive pruning and the use of more sources to support controversial points.

Moreover, the biography meanders and is burdened with too many long quotes and irrelevant details. Jackson presents three different threads without weaving them together: Ellwood's life, the difficulty of determining who actually designed Ellwood's buildings, and the buildings themselves.

Perhaps because of Ellwood's self-aggrandizement and his limited training, Jackson focuses on the question of design authorship. Disputes over credit for designs are frequent in offices headed by stars. But Jackson suggests that Ellwood's contributions to the office were largely limited to architectural details and self-promotion. Although Ellwood may have been self-invented, the vision needed to establish and sus-

Kenneth Caldwell is an Oakland-based communications consultant to architects and a contributor to San Francisco and California journals.



tain his office was his.

Jackson's strength lies in the clarity with which he writes about Ellwood's buildings. He gets behind the photographs and the style and analyzes what was original and what was not. His description and quotes about the "shadowline," the thin space between a building's components or materials, and about Ellwood's "chasing the gaps" to make sure there were no clumsy or unplanned connections, gives the reader a good feel for the young architect and his office. Perhaps Ellwood's fondness for a reductive Modernism grew, in part, from his experience as a cost estimator on early Modern houses in Los Angeles; it may also have been a strategy to conceal his lack of education and training.

Jackson connects Ellwood's evolving designs to his frequently repeated lectures and occasional writings, which moved from relatively simple ideas about "visual expression," using form and structure, to those for using more sophisticated prefabricated components and steel. In the chapter "Californian Mies," Jackson traces Mies's influence on Ellwood and shows that he reinterpreted Miesian details, as when he used a redundant H column on either side of the exposed corner at the Daphne House in Hillsborough, California.

In describing this complex man, Jackson equivocates between accepting Ellwood as an impostor and viewing him as an innovator. As a result, the author leaves us wondering who Ellwood really was as a man or as an architect. But Jackson's insightful explanation of the buildings nevertheless makes the book a valuable resource for serious students of the period.

A forgotten Californian

If some of Jackson's assertions are a reach, Cory Buckner's new book, *A. Quincy Jones*, does not reach far enough. Perhaps because Jones was not interested in the building as isolated object or monument, he was largely neglected after his death in 1979. He has returned to the architectural spotlight only with the recent resurgence of interest in midcentury style.

Although Jones is often grouped with other midcentury practitioners, he was more eclectic than his peers, including his southern California colleagues and fellow Case Study House architects Ellwood, Ed Killingsworth, Pierre Koenig, and Raphael Soriano. Jones's architecture was not reductive; he employed a rich variety of materials, layers, textures, plant materials, and often vivid color, and he seemed less obsessed with the building's image than others in this group.

A friend of Jones, Ratan Tata, wrote in the 1983 Japanese publication *Process No. 41* that "Quincy's architecture never sought attention through visual drama. His work reflects spatial sensitivity, great recognition of nature and natural materials as well as plant life, and a great feeling for integrating indoor and outdoor spaces. The

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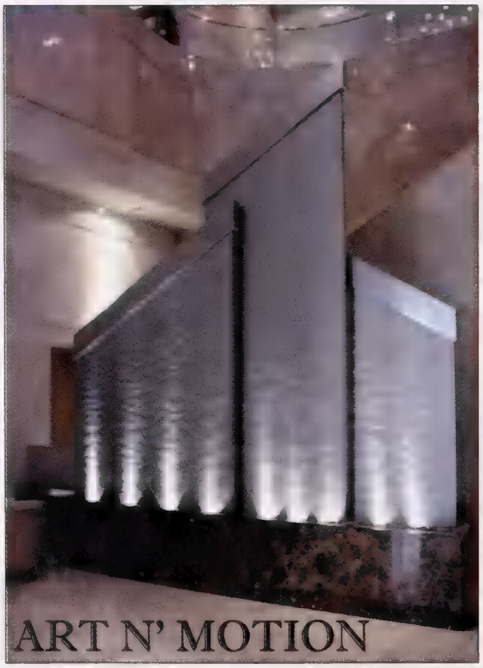

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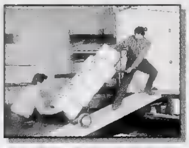

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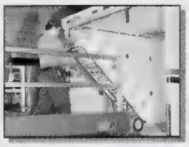

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success of circulation within his architecture often gets taken for granted." Sometimes Jones's exterior designs bordered on the plain; the focus was always on the plan and the human experience within that plan.

Buckner, picking up on this idea, quotes from noted historian Esther McCoy: "He seemed to be profoundly present in his floor plans, bound kinetically to them, like someone who walked them in his mind as he drew." Yet only a fourth of the projects presented by Buckner include plans of any kind.

The book's Minimalist graphic style, while attractive, is inappropriate. The volume includes more than 60 of Jones's projects, but several are shown with just one or two images. Some images seem to have been chosen for style only, not substance. And in some cases, visual information is too spare. For example, the campus of Cal State Dominguez Hills' greatest strength lies in its pedestrian and garden experiences, but Buckner shows only its library. Additionally, some project descriptions, including those for the Daphne Funeral Home in San Francisco and UCLA's Research Library, are inaccurate or imprecise.

If Buckner's book, the first on Jones since the 1983 *Process No. 41*, sparks renewed interest in the architect, perhaps future volumes will examine his plans and architectural thinking more critically.

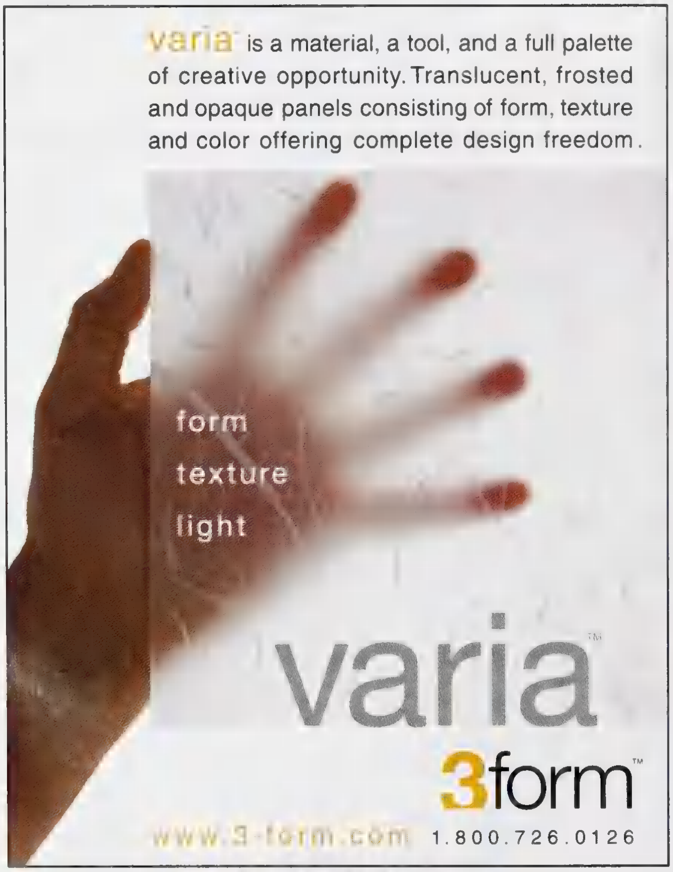
Early Rudolph

Drawing on the Library of Congress's archive of Paul Rudolph material, Christopher Domin and Joseph King have produced a book that strikes the right balance of criticism, biography, and a visual catalog of projects. It reviews Rudolph's early development in Florida and makes a strong connection between regionalism and Modernism.

The introduction by Robert Bruegmann, a professor in the art history department at the University of Illinois at Chicago, stresses the importance of Ezra Stoller's photography and how it contributed to Rudolph's visibility in the architectural press and beyond. King's essay introduces a young man fresh out of Harvard who was rapidly promoted to partner in Ralph Twitchell's small regional practice in Sarasota, Florida. King gives us a sense of the ambition that propelled Rudolph beyond the confines of Sarasota and notes that Rudolph's early houses were so simple that he developed an elaborate rendering style to attract publicity before a building was completed. King, an architect who understands the materials and construction methods of Rudolph's unusual beach houses, writes about them clearly and accessibly.

Domin charts Rudolph's path after he left Twitchell's practice and moved to New Haven. Domin shows how Rudolph—a restless experimenter—wanted to go beyond a rigid Modernism, articulated an interest in history and issues of urban design, and evolved into the "sensualist" whom Ellwood later criticized. Domin also points out that the introduction of affordable residential air-conditioning gave Rudolph freedom to explore new forms and spatial organizations and that he moved toward increased monumentality in his later, widely publicized houses. Success took Rudolph away from a humble but splendid achievement—the modest Modern house that responded to climate and culture.

What emerges from each of these four books is the crucial role of photography in our perception of midcentury Modernism. An essential but imperfect tool, photography has simplified and often distorted history. Telling the larger story of this era will require more focused investigations into its individual architects. ■



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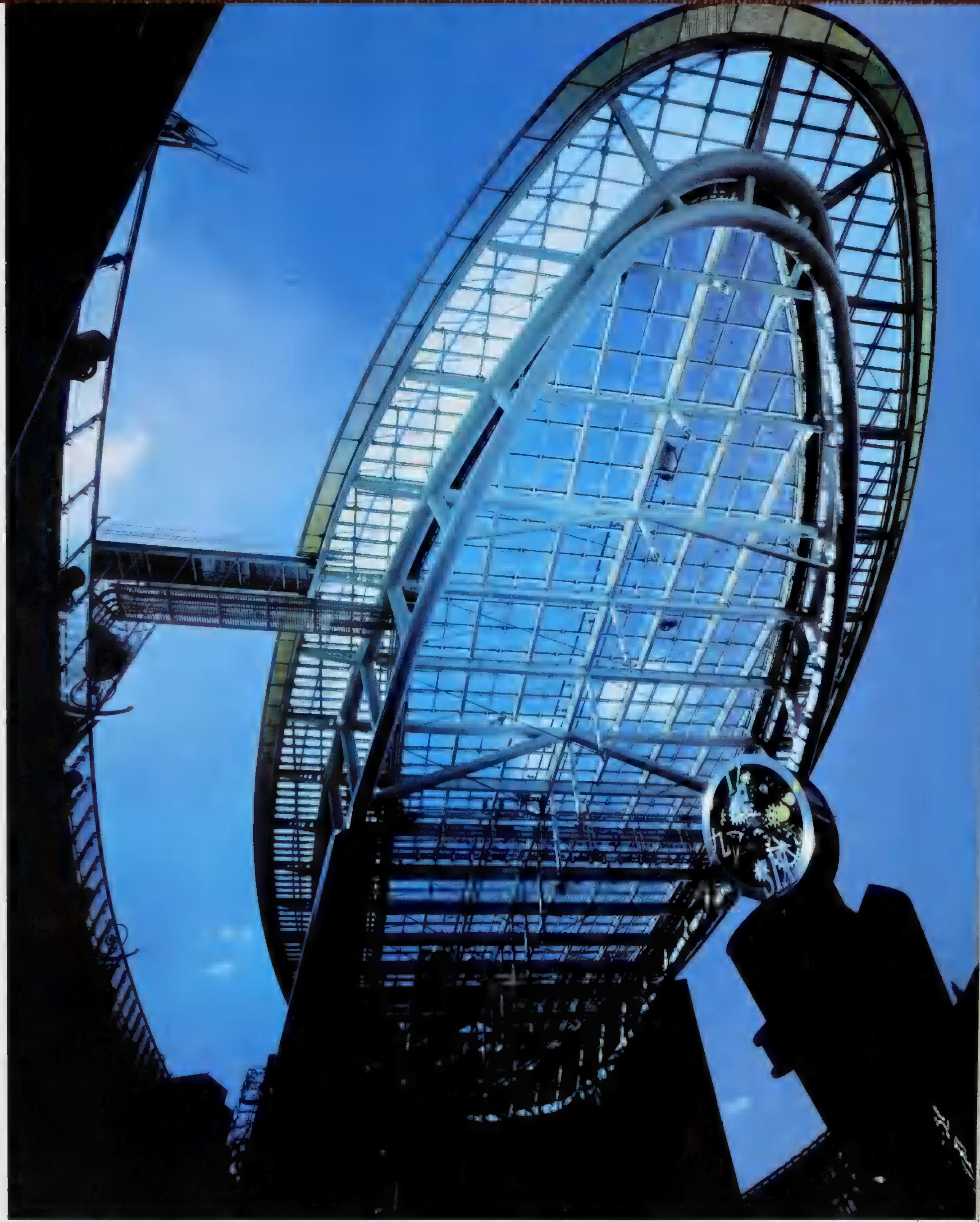
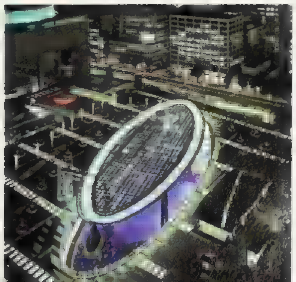


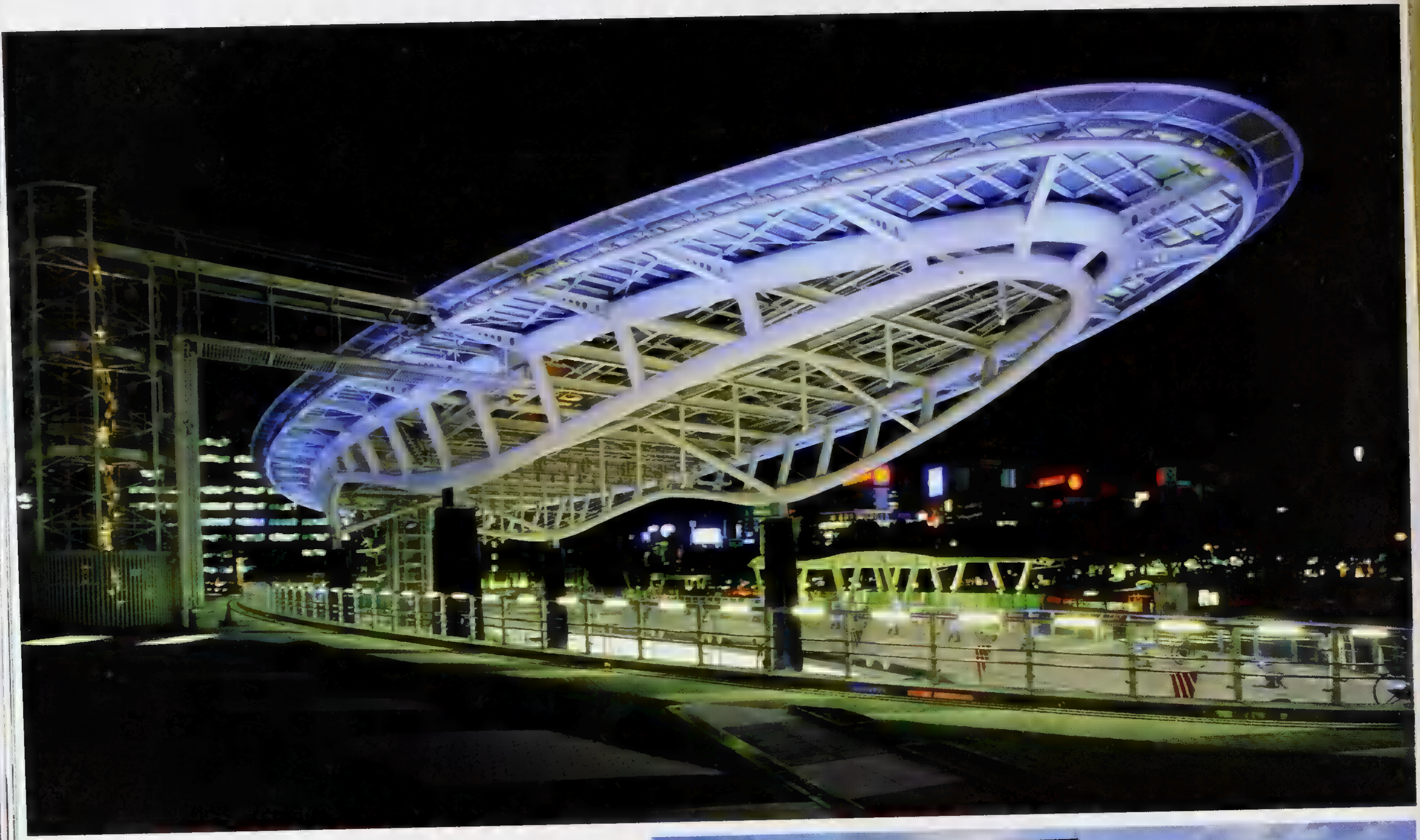
By Naomi Pollock

Intergalactic design at a Japanese urban park

Located midway between Tokyo and Osaka, the city of Nagoya is a major intersection on the Bullet train's main artery. From there local train lines branch out in all directions, up to the Japan Alps, down to the Japan Sea, and all around the immediate metropolitan area. Because of the large volume of people who traverse Nagoya's extensive transportation network each day, retail outlets and restaurants have cropped up above, below, and around each node, turning many underground train and subway plazas into subterranean shopping malls. Teeming with activity, these underground labyrinths of boutiques, bookshops, bars, and bakeries inhabit their own world, completely cut off from the external environment.

Though a very efficient way to utilize space in a country where buildable land is a precious commodity, the two-tiered system isolates pedestrians from ground-level activities and cuts off contact between people and parks, as well as other civic facilities. Situated between Nagoya Castle and the city's main shopping district, Obayashi Corporation's Oasis 21, a 219,483-square-foot, multilevel urban park, attempts to bridge this gap. "Following the





Oasis 21's water-covered roof soars above the plaza (above and right). A 9-foot pedestrian path rings the "Aqueous Starship," allowing visitors to beam up and enjoy the view.

philosophy of traditional Chinese treatment, an acupressure of a therapeutic point can improve the whole circulation of blood," says Obayashi principal Hideki Kasai.

The winning entry in a closed competition held in 1997 among Japan's five leading construction companies, Obayashi's park design forges a direct connection between the lower level, the ground plane, and the sky above. It consists of three main elements: Galaxy Platform, an 80,729-square-foot, ovoid sunken plaza; Aqueous Starship, a soaring steel frame supporting an oval, water-covered glass roof above the plaza; and a 150,694-square-foot grassy park at grade abutting a bus terminal. While wheelchair-friendly slopes, stairs, and elevators connect Platform and park, a separate elevator and stair beam visitors up to the top of the Starship, 46 feet above grade, where a 9-foot-wide pedestrian path rings its water-covered glass roof.

The scene of concerts, open-air markets, and other civic events, Galaxy Platform is a welcome escape hatch in the vortex of existing underground shops that spin out from its perimeter in every direction. But the main purpose of the development is to reconnect the underworld with the natural world by letting fresh air, daylight, and sky views filter down, underscoring seasonal change with the park's pink cherry blossoms in spring and maple trees' autumnal hues, and drawing attention to ever-changing daylight with the Starship's water-covered glass roof. ■

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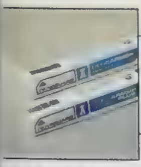

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"At Valeo, we are convinced that architecture is a component of productivity, and we strive to give personnel the best conditions to achieve excellence." —Jacques Tillement, director, Valeo Group Property.

By Jane F. Kolleeny

What fuels the engine that powers the architect's world? Clients do. Even so, architects fail to understand that the primary objective of their clients is rarely design itself, but the use of design to further their product, service, or domestic goals. In a survey conducted by AIA this year entitled "The Client Experience," two definitions of design were offered in the summary: "To clients, *design* is a noun; it's the tangible thing that architects create. To architects, *design* is a verb; it's a process and mindset." Understanding this fundamental difference of perspective is key to the client/architect relationship.

Winners of the Business Week/Architectural Record (BW/AR) awards seem to have talent in bringing together these two definitions of design. Indeed, how architecture promotes or fulfills the stated goals of a client is the single most important criterion for winning the award, and the unique collaboration of architect and client is the process that fuels it. The goals of clients vary. They can be economic, demanding a building that increases production and translates into increased profits. They can be iconic, used to convey a message about the client either to the public, the workforce, or both. We see that one corporate goal usually spills into another—they are not discrete. A better environment leads to increased production because employees are happy.

BW/AR award winners must provide tangible evidence, such as measurable change, that illustrates the ways such goals were accomplished through architecture. Such positive outcomes don't simply arise by magic. We usually find that a notably harmonious relationship between architect and client underlies these results. Stan Askew, president of Allsteel, a winner of this year's BW/AR award, says, "Designers who tell you they know the answer don't have the answer. It's been our experience that the designers who take time to listen to you and be part of the team are successful."

Using architecture to convey a new story to the public

BW/AR finalist Ing Direct, a European banker, used architecture as a pow-

Clients fuel the engine that powers the architect's world

architects to build success

erful tool to reinforce its brand. Being virtually unknown in North America, the company knew it would go unnoticed if it launched in the conventional way. Highlighting its differences from traditional banking, in its first Midtown Manhattan bank Ing replaced the expected row of tellers with an upbeat café featuring coffee, drinks, and food, free Internet access, and branded merchandise in a modern, trendy setting. The scale and feel of the café and the colorful orange neon exterior sparks the curiosity of potential customers, drawing them inside. There visitors discover an entirely new way to conduct banking. They sit down, order a latte in the familiar ambience of a coffee bar, and discuss banking with the friendly banking/wait staff. An enticing environment, designed with meticulous care by Gensler, becomes a showcase for selling banking services.

In the first quarter of the year, retail sales in the café boomed, exceeding projections by 73 percent, and business grew from $4 billion to $7 billion. Underlying this success is a highly effective relationship that evolved between Ing and Gensler. According to Jim Kelly, executive V.P. for sales, "We needed someone to interpret our vision. Gensler listened and listened, then listened some more. They got under our skin. They probed our tastes for colors, design, furniture, merchandising, and brands. Then they presented their 'Big Idea,' and we knew we had partnered with the right firm."

While architects are known to be great problem-solvers and innovators, they also have a reputation of being ego-driven and not cooperative team players. Architects that "stop doing what they do and think about what their client does," says Frank Stasiowski of PSMJ Resources, can open the door of opportunity. In this case, Gensler knew that design would pay off if they tuned in clearly to the business goals of the client, rather than imposing a fixed view.

Putting the employees first

Most call centers are like dungeons—they are often converted warehouses—windowless, impersonal. Cellular Operations knew they needed a call center that would keep its young and restless workforce gratified. What to do? Through the clever architecture of Richard Hywel Evans in London, the firm created an environment that is irresistible to its employees. According to company chairman Richard A. Lee, "Inside, the open-plan layout, with a large breakout area, gives a buzz to the atmos-

"As a start-up brand with zero name recognition in the crowded U.S. market, Ing Direct had to make a refreshing new statement. The café arose out of that thinking." —Jim Kelly, executive vice president of sales, Ing Direct.

"We set out to create an extraordinary building for the price of a shed. We didn't succeed totally, but we delivered something extraordinary for 20 percent more than a warehouse."
—Richard A. Lee, chairman, Cellular Operations.

phere. We deliberately put in features to make the staff smile. There are no indicators for the elevator to tell you what floor it is on, unless you look at the height of the fountain outdoors, visible through a glazed wall, which follows the elevator's movement up and down. The elevators themselves respond to the presence of a body like a burglar-alarm sensor, the stairs look like the skeleton of a dinosaur, there are tea trollies with real tea servers to serve employees, and themed toilets are available for use, so you can pick the one that suits your mood."

While the company's focus was on pleasing employees, the concept caught on with potential distributors, dealers, suppliers, and business partners, who became keen to work with them. Celebrated in the national press as the happiest work place in the country and utilized by the government to promote progressive environments, Cellular Operations is now the second-largest independent cellular service provider in England.

Good design wins when in the final analysis it brings more value. "The corporate client is likely to measure value in terms of specific productivity and revenue generation and subjective things like image enhancement and attraction of talent," says Hugh Hochberg, partner in The Coxe Group, marketing and management consultants to the design professions.

Cellular Operations did all these things for sound economic value—to keep their employees happy. "You can hear if someone's smiling when they answer the phone, and that makes a good impression with the customer. If your staff is happy, it's far more likely to stay, which cuts down recruitment and training costs and provides a stability and continuity for business," explains Lee. And cut costs they did—staff turnover decreased by 50 percent.

Using architecture to enliven a name

A leading retailer of merchandise for children, Toys "R" Us turned the tide on what was a fairly utilitarian approach to the marketplace when they opened their flagship in Times Square, New York City, in 2001 and used architecture to reposition themselves. Allowing the store to resonate with the prevailing flash of 42nd Street was an audacious approach. Designed by Gensler, it has become a display case for conveying a new direction, complete with celebrity appearances, new product launches, and author and product signings. Using an unprecedented combination of innovative

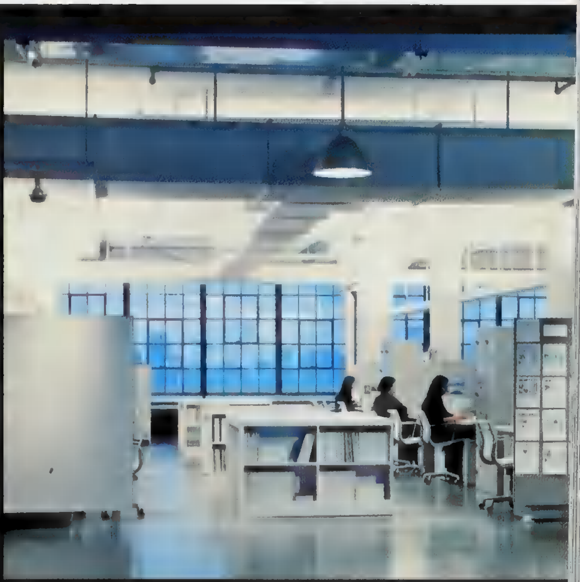
"The planning process involved formulating special interior, exterior, and scroller teams to attack those aspects of the design. Each team shared their progress in a weekly project meeting."
—David Picot, V.P., real estate, design, and construction, Toys "R" Us.

retail design, entertainment architecture, and groundbreaking graphic communication, the store has become a premier destination for visitors, exceeding 5 million since opening. Its product sales are also up, and every major news outlet has covered the store. Its success has evidently awakened its executives to the power of place, because they intend to refocus their stores nationwide in a like-minded fashion.

For architecture to take such a central role in branding, "you need a client who believes in the project goals and objectives from both a business and design perspective," says David Picot, Toys "R" Us V.P. of real estate, design, and construction. On this project, architects, engineers, and designers were part of the client team from the beginning. "Pride of authorship must be set aside to demonstrate flexibility and response to the client's overall program," says Williston Dyre in his article "Activity vs. Solutions: What Matters to Your Client?" in the June 2002 issue of *Design Intelligence.*

So, too, clients must understand and convey their needs. "Clear communication is necessary on the client's part, not only regarding the program requirements, but all the other factors that are important to the final decision maker(s)—image, style, maintenance, philosophy, culture, and so on—and then ongoing feedback between the client and design team during the conceptual phase," advises Kerry Harding of Talent Bank, the architecture business consultants.

"This is the third and largest set of kitchens we have designed over our twelve-year history with the architect, and our collective experience has resulted in a layout that is enormously efficient and productive."
—Gael Towey, creative director, Martha Stewart Omnimedia.



Architect as a trusted adviser

Second-time BW/AR finalist Valeo Electrical Systems had already worked with its architect, Davis Brody Bond, on a technical center in Auburn Hills, Michigan [RECORD, October 2000, page 88]. So, while this latest project—Valeo Production Facility in Mexico—was quite different in scope, the firm had a prior, established relationship with the designer. As part of the initial design process, the architects attended a series of brainstorming and design workshops at corporate headquarters in France with the client team leaders, user groups, and budget personnel.

Martha Stewart Living Omnimèdia, another finalist, had been working with its architect, Daniel Rowan, since the company's inception in 1989. Rowan had been integrally involved in the strategic planning of the firm's facilities during a period of phenomenal growth. The understanding and shared aspirations of both parties were in place long before the current project was undertaken, which was the largest to date for both of them.

In these cases, architects have become trusted advisers, instrumental in their clients' strategy during the planning stages. Architects are not often involved in the predesign stages of projects, which are usually handled in boardrooms among client executives, well before an architect joins the team. "The skill sets that make architects flourish during the design phase would enhance the project as a whole if architects could apply them during other phases," concludes AIA in their survey—but, typically, clients perceive architects as designers, not strategists.

Till death do us part

"It costs six to eight times more to obtain a new client than it does to keep one. If service firms evaluated the cost of losing clients, they would concentrate more on keeping their current clients," noted Theresa M. Casey as early as October 1996, in "Client Relations Programs," *SMPS Marketer.* Indeed, architects are well aware of the value of repeat clients but don't always know what it takes to keep them. If architects remain steady with clients through thick and thin, accepting less interesting commissions between larger ones, being available during construction and post-occupancy, becoming client-centric in outlook rather than project-centric in their business development overtures, they can learn the client's business and gain their trust over time. Certainly, the examples used above provide positive models to emulate.

Each architect/client relationship we have explored takes its own evolutionary journey, arriving at a final, unique solution. The collaborative process itself is at the heart of successful outcomes. It's not that the architect or the client dictates an answer, but an organic process evolves where every step along the way contributes to an eventual outcome that goes beyond the dictates of architecture and relates to the fundamental raison d'être of the client's existence. In "Understanding Client Relationships," in the August 2000 *Design Intelligence,* Robin Ellerthorpe, FAIA, stated, "The winners are those firms that looked out for the long-term relationships, who performed every task as an opportunity to excel in working with their client." ■

Give Us Measurable Business Results

AN AWARD THAT ASKS **HOW GOOD DESIGN CONTRIBUTES** TO THE BOTTOM LINE

This is the sixth year of the Business Week/Architectural Record awards program. As has been true from the beginning, the award is about how architecture enhances business strategy. In the words of juror Chee Pearlman, "Architecture becomes part of the business plan, necessitating intimate collaboration between architect and client at the very top levels of decision making."

Other trends became evident this year. The jurors reviewed 164 applications, honing that list down to about 20 comprising the winners and finalists, all of which were visited by members of the jury. While winning projects are not necessarily offices, this year the majority were—11 of the 18 finalists. One important theme among winners was the role of community in the workplace. This sense of community is evident in the emphasis on horizontal organiza-

6th Annual Business Week/Architectural Record Awards

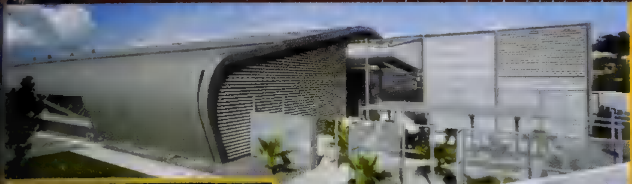
This unique awards program judges entries on the basis of their architectural excellence and the degree to which they advance the owners' goals. Entries include information on the results realized by each project. The jury is selected by Business Week, RECORD, *and AIA (the sponsor) and includes architects, academics, critics, and business leaders. After the jury narrows the entries to about 20, at least one juror visits the sites. For more coverage, see the November 4th issue of* Business Week *or go to www.architecturalrecord.com.*

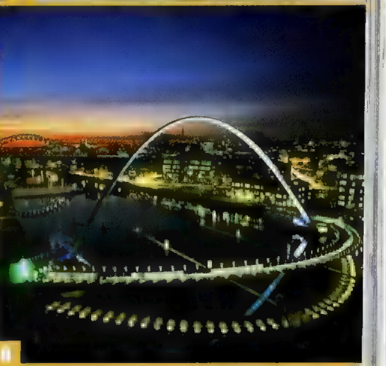
2002 AWARDS JURY

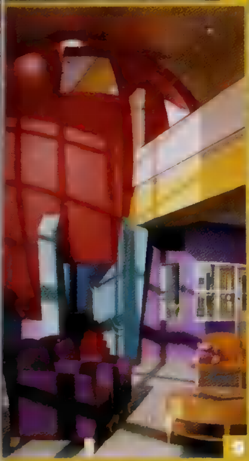
- **Lawren[illegible],** *President, World Developm[illegible]ederation*
- **Steven Gol[illegible], FAIA (chair),** *Partner, Mitch[illegible]Giurgola Architects*
- **Dr. Michael Hammer,** *President, Hammer & Company*
- **Jon Jerde, FAIA,** *Chairman, Founder, The Jerde Partnership*
- **Toshiko Mori, AIA,** *Toshiko Mori Architect*
- **Tim O'Brien,** *Vice President, Real Estate, Ford Motor Company*
- **Chee Pearlman,** *Chee Company*
- **Cathy Simon, FAIA,** *Principal, SMWM*
- **David A. Thurm,** *Vice President, Real Estate Development, New York Times*
- **Robert Vanech,** *Principal, ETF Group*

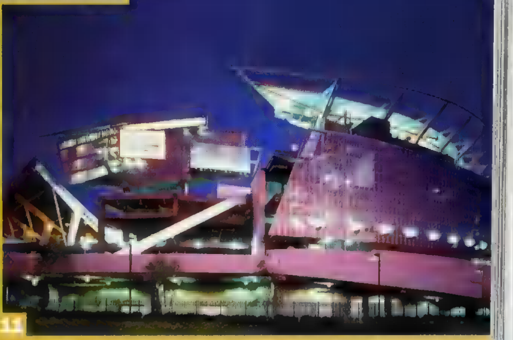
JURY DESIGNATES

- **John D. Rees,** *Principal, The Rees Group*









tion, where segregation and hierarchy are minimized and employee empowerment and lifestyle enhancement are encouraged. Juror Cathy Simon remarked that "in a world where more and more employees can work independently, the need for community is ever stronger. Every project is about visibility and transparency, which is also a metaphor for the companies that built these buildings. It seems to me a wonderful affirmation of the need that people as social creatures have to come together, now more than ever."

Branding was often at the forefront of winning projects. On this topic, Robert Vanech remarked: "It isn't one size fits all, but each project captured something special—like Allsteel, which captured an honest Midwest manufacturing environment." And what made the winners stand apart this year? In Toshiko Mori's words, it was "the degree of aspiration that both client and architect displayed and the risk they shared. They actually dreamed a dream and shared a vision; they became personally accountable, took chances, made a commitment." The winners, as if by sheer force of nature, rose to the top effortlessly. Coverage of winners, finalists, and unbuilt-project-award winners follows.—*Jane F. Kolleeny*

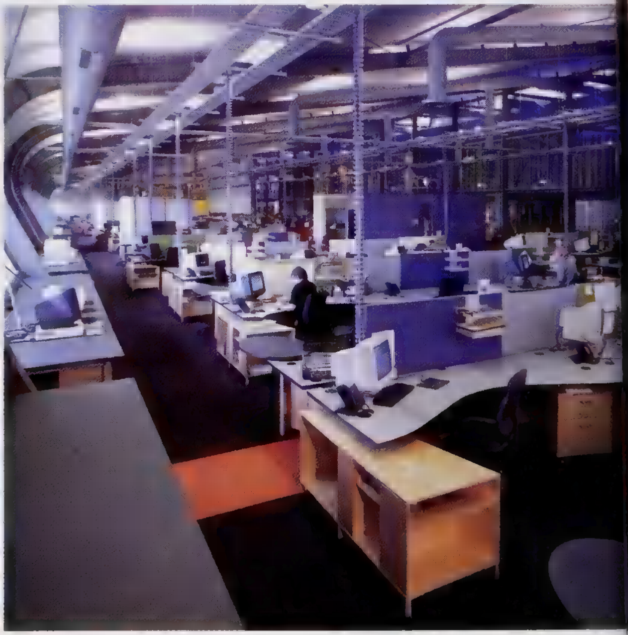
1. **Multi-Use Centre**
   Photo: © Kim Christensen
2. **University of Pennsylvania Dept. of Facilities and Real Estate Services**
   Photo: © Barry Halkin
3. **Cellular Operations Headquarters**
   Photo: © John Mclean
4. **Allsteel Headquarters**
   Photo: © Chris Barrett/Hedrich Blessing
5. **Toys "R" Us**
   Photo: © Peter Paige Photography
6. **Valeo Electrical Systems**
   Photo: © Jaime Navaro
7. **Abercrombie & Fitch Headquarters**
   Photo: © Anderson Architects
8. **Gateshead Millennium Bridge**
   Photo: © Graeme Peacock
9. **Texas Children's Hospital Clinical Care Center**
   Photo: © Craig Dugan/Hedrich Blessing
10. **Trumpf Customer and Technology Center**
    Photo: © Paul Warchol
11. **Paul Brown Stadium**
    Photo: © Tim Griffith

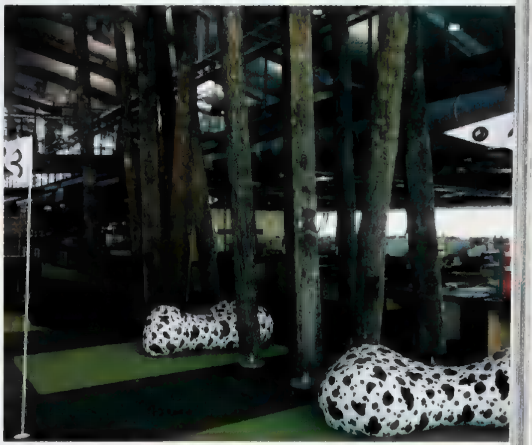
AN OPEN ENVIRONMENT FOSTERS CONNECTIVITY AMONG STAFF

Program: The client wished to create an innovative office environment that would respond to the workplace, as well as the recreation and leisure needs, of its employees, while fostering interdepartmental communication, increasing production, breaking down hierarchies, and providing gathering areas to stimulate creativity. The architects worked closely with the client to bring new ideas to a traditional multiuse environment that includes a 24/7 call center, software development operations, and IT infrastructure. Concepts were researched, developed, and tested. The team held charrettes, brainstormed, and critiqued. User focus groups were convened for feedback and ideas.

Solution: The resulting design is based on an open-plan office to engender comfort, good cheer, productivity, and inspiration. The plan organizes teams around a central common area for meeting, work, and social gathering. This central "park" idea and café are the hub for the office community. The solution is fun, captures the spirit of the place, and is being used with considerable enthusiasm. Traditional hierarchies are physically broken down to reflect the new image and culture. Post-occupancy evaluation has shown an increase in verbal communication (less e-mail by 30 percent), staff turnover reduction of 50 percent, and a 10 to 15 percent faster software development delivery.

> **"What stands out about this project is the collaborative effort undertaken among all disciplines involved, including the end users."**
>
> *—LAWRENCE EDGE, PRESIDENT, WORLD DEVELOPMENT FEDERATION*





PHOTOGRAPHY: © KIM CHRISTENSEN PHOTOGRAPHER

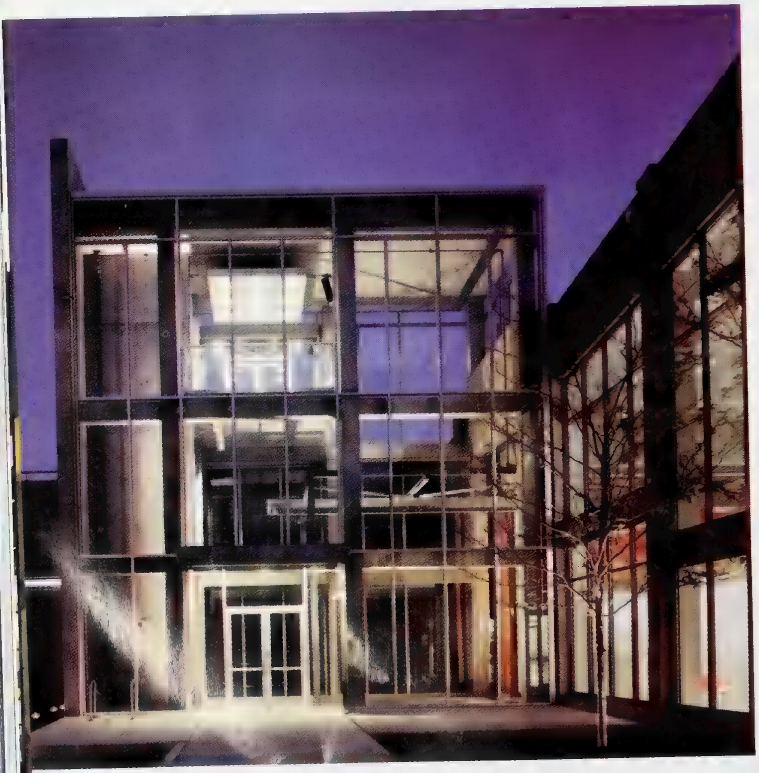
Project: *Multi-use Centre, Albany, Auckland, New Zealand*
Architect: *JASMAX Limited, in association with Bligh Voller Nield*
Client: *Dominion Funds*
Key players: *Jacob Consulting (structural); Lincolne Scott New Zealand (building services)*

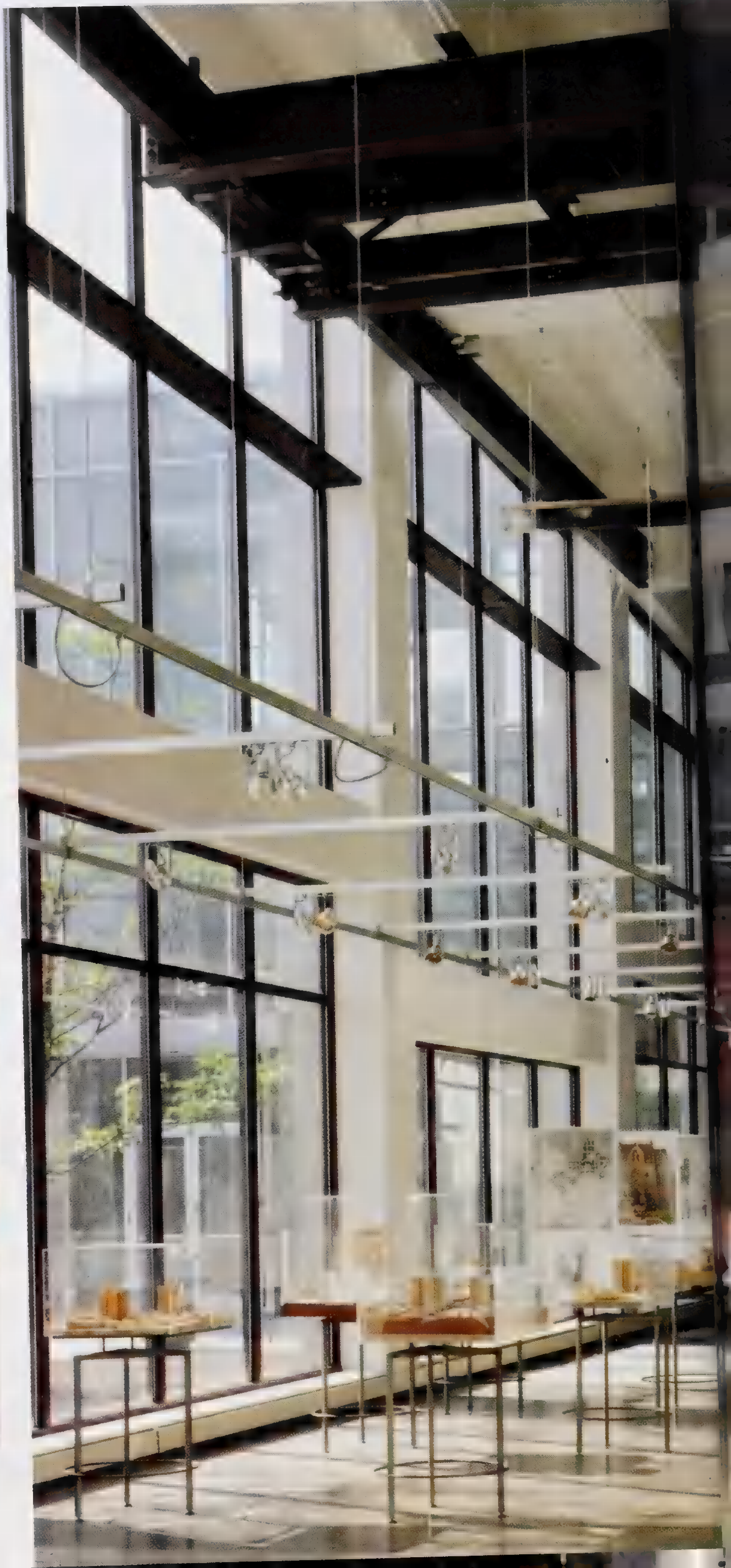
A PIONEERING MOVE ENLIVENS A MARGINALIZED CAMPUS AREA

Program: Facility departments at universities typically inhabit uninspiring spaces, and the University of Pennsylvania facilities was no exception. Overcrowded and dispersed among several buildings, the department needed to reshape its image and improve its function. It underwent a major restructuring, intending to demonstrate with its new quarters the value of good architecture and planning in an academic environment. Utilizing the track level of a massive abandoned 1929 railroad warehouse on the eastern end of the campus, the client consolidated the scattered parts of the department into this industrial facility. Additionally, the project revived a vacant industrial quarter of the city, extending the campus boundary eastward toward downtown, providing a center for future development.

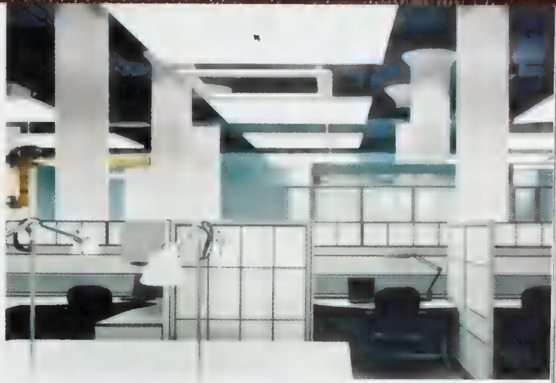
Solution: The architecture of this new space is a celebration of the industrial character of the warehouse. The project has brought positive energy to what was previously an undesirable edge of campus, and the perception of the department by the architectural, university, and business communities has significantly improved. The project's success is evident on many levels: A post-occupancy survey revealed increased morale and improved communication, and administrators report greater ease in recruiting and retaining personnel.

> **"This rather humble and modest project makes many, many inventive moves, with an amazing facility as a cumulative result."**
>
> —*TOSHIKO MORI, ARCHITECT*





Project: *University of Pennsylvania, Department of Facilities and Real Estate Services, Philadelphia*
Architect: *MGA Partners, Architects*
Client: *University of Pennsylvania*
Key players: *CVM Engineers (structural); Marvin Waxman Consulting Engineers (mechanical)*



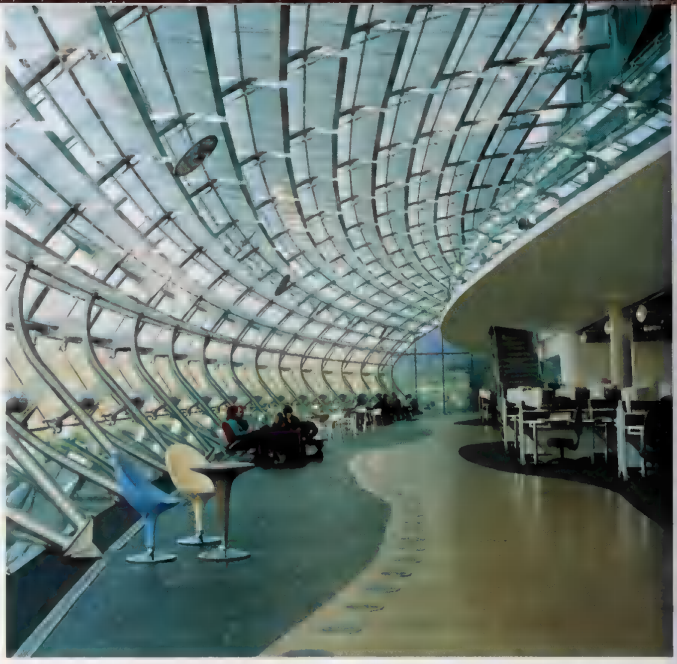
PHOTOGRAPHY: © BARRY HALKIN

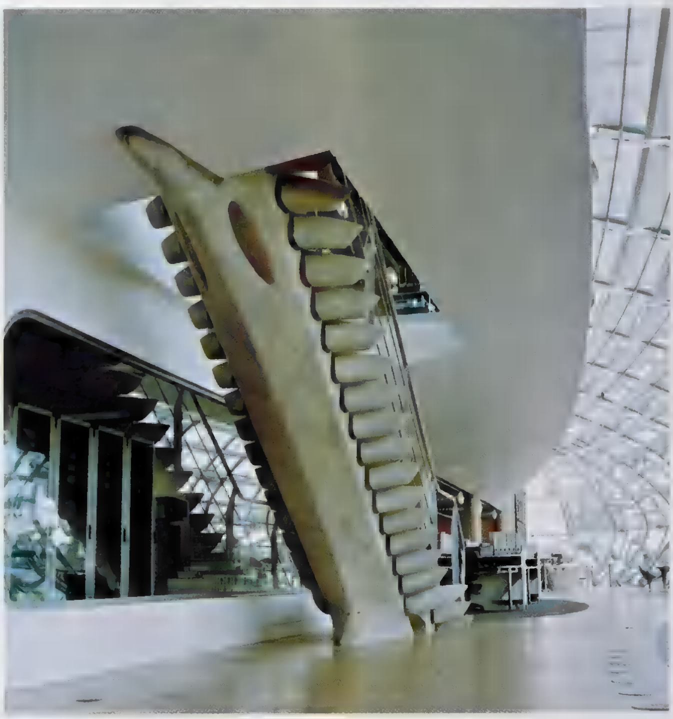
FANCIFUL DESIGN MAINTAINS THE INTEREST OF THE YOUNG AND RESTLESS

Program: Cellular Operations' staff were overcrowded and spread out among four buildings, making communication difficult. In addition, a youthful workforce in a fast-changing industry created huge staff turnover. The company wanted an exciting place where employees enjoyed their work, and an open office plan that encouraged information dissemination and serendipitous meetings. Lastly, the firm wished to exceed its place as fourth- or fifth-largest in its industry in England. Knowing that architecture could help to achieve these goals, the company sought a building of exceptional design.

Solution: An open-plan layout with a large breakout area was designed to add a buzz to the atmosphere of the offices. Whimsical features in the design cheer up the staff, including stairs that look like the skeleton of a dinosaur, tea trollies with real tea servers, elevators that operate with a sensing device, and themed toilets. If your employees are happy, they're far more likely to remain on staff and respond in a friendly fashion to customers, cutting down on recruitment costs and providing stability for the business. The building has also had a major effect on potential distributors, dealers, and suppliers, now keen to work with the firm. Lastly, since the redesign, the company has dwarfed the competition, becoming the second-largest provider of cellular phone technology in England.

> **"The building has lighthearted elements as relief and as a sign that employees are important and the building is for them."**
> *—DR. MICHAEL HAMMER, PRESIDENT, HAMMER AND COMPANY*





Project: *Cellular Operations Headquarters, Swindon, England*
Architect: *Richard Hywel Evans Architecture and Design*
Client: *Cellular Operations*
Key players: *Buro Happold and Curona Design (engineers); Tilbury Douglas (general contractor)*

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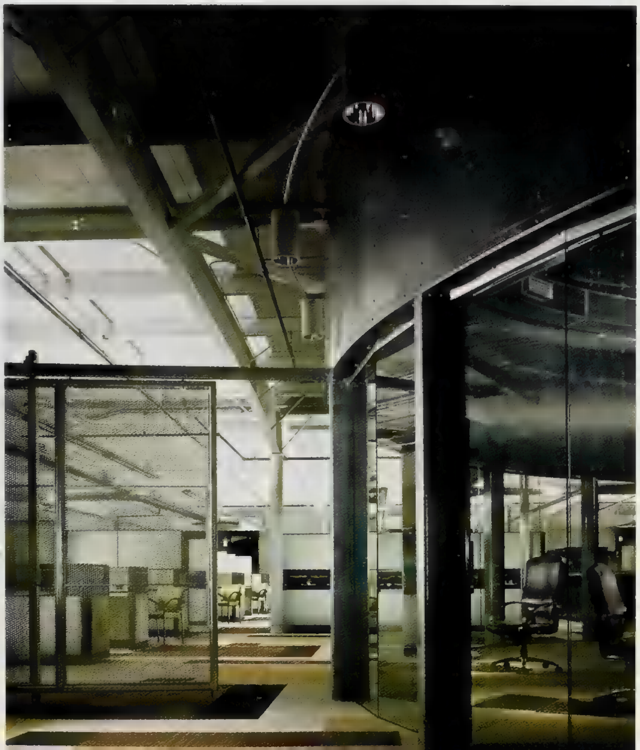
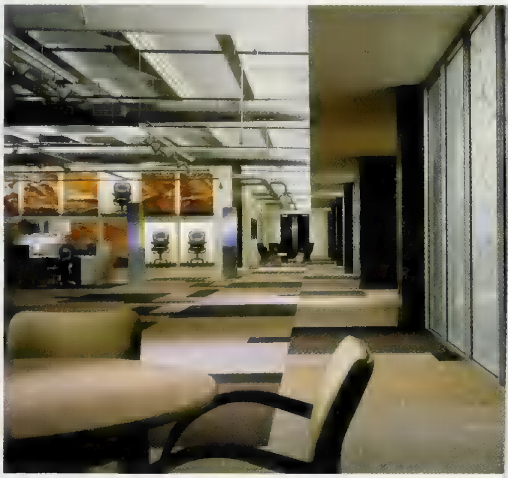
MIDWESTERN VALUES ARE THE HEART OF THE ALLSTEEL MESSAGE

Program: Seeking to reestablish a century-old identity separate from a new parent corporation, this office-furniture manufacturing company wanted a facility representative of a new company mission. In addition, the client wished to create a collaborative work environment that reflects its brand and communicates design sensitivity to the architecture and design community, while expanding its existing client base. The company's core midwestern values—honesty, fairness, and respect—formed a strong foundation from which to build the new business culture, but it realized that dramatic innovations were needed to effect substantive change.
Solution: The company purchased a 65,000-square-foot abandoned factory with the intention of uniting its scattered employees (referred to as "members") into one headquarters facility. Through signage, office-plan layout, and display, a nonhierarchical culture evolved that was transparent both to the staff and to the public while capturing the essence of the new brand and helping the company establish direction. Since opening in 2000, the firm has had 364 visits from dealers and potential end users—compared to 15 in the prior year—and 90 percent of all such visits resulted in new business. Corporate accounts have grown from 3 to 15 percent of the company's business in the past year, and product delivery time has been cut from 24 months to 16 months.

> **"I was deeply struck by the humility of the message throughout the company—one of warmth and community."**
> —*CHEE PEARLMAN, DIRECTOR, CHEE COMPANY*

Project: *Allsteel Headquarters, Muscatine, Iowa*
Architect: *Gensler*
Client: *Allsteel*
Key players: *KJWW Engineering Consultants, and Martin & Whitacre Surveyors & Engineers (engineers); Knutson Construction Services (general contractor)*





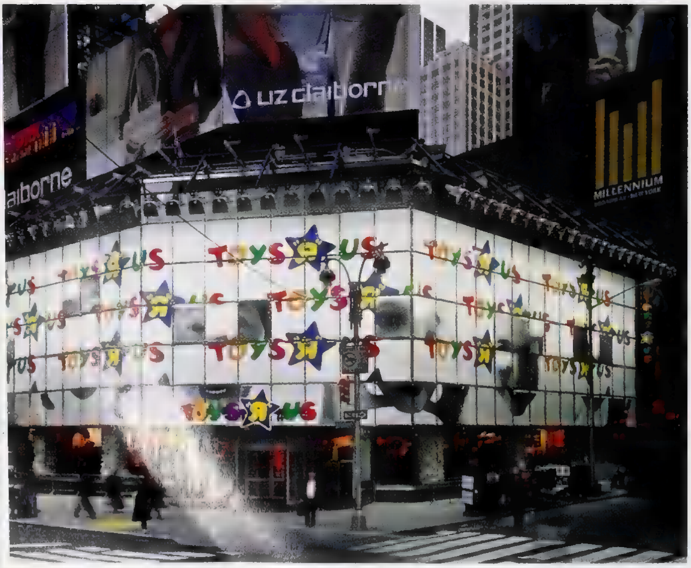
ENTERTAINMENT RETAILING IS THE NEW BUZZ WORD AT TOYS "R" US

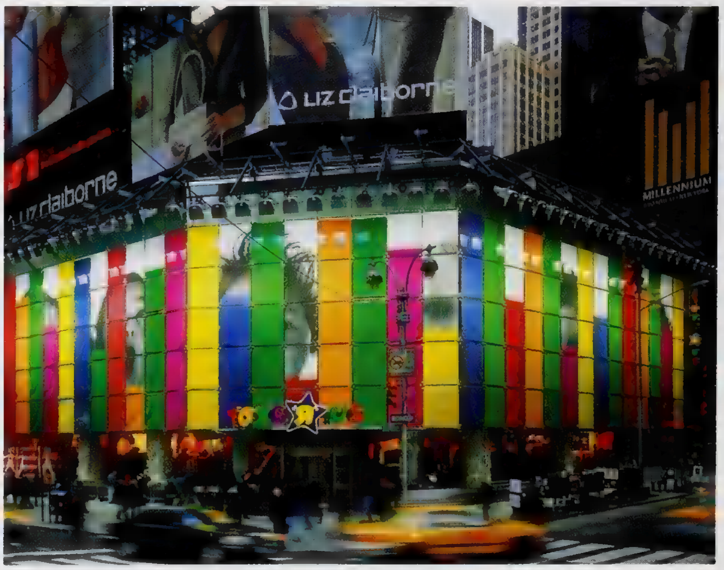
Program: In an effort to increase its recognition in a highly competitive field, Toys "R" Us decided to reposition itself with the introduction of a flagship store smack in the middle of glitzy Times Square, New York City. The company wished to have a landmark store that would serve as an exciting geographic and emotional destination for customers and products, a "Center of the Toy Universe," as the firm put it, that would pull out all the stops to create an exciting experience for customers and new opportunities for vendors to display and launch products.

Solution: The site consisted of two older theaters requiring extensive renovation. Billboards on the roof that generate significant income for the landlord had to remain intact. To meet a completion goal set for the following year's holiday season, design and construction had to occur in 18 months. Making a splash in media-rich Times Square was a challenge. A high-tech signage system covers the entire facade of the building. Lining translucent windows, 165 scrolling panels display up to eight changing images. Through an unprecedented combination of innovative retail design, entertainment architecture, and groundbreaking graphic communication, this store has become a premiere destination. Media coverage, visitors to the store, and revenue from advertising have all exceeded expectations.

"I go to Manhattan every year with my kids and take them to F.A.O. Schwartz. This year I'm going to Toys 'R' Us." —*ROBERT VANECH, PRINCIPAL, ETF GROUP*

Project: *Toys "R" Us, New York City*
Architect: *Gensler*
Client: *Toys "R" Us*
Key players: *J. Newbold Associates (interior theming); Gilsanz, Murray, Steficek (structural); FMC Associates (mechanical, electrical); Show & Tell (scroller system technology); Focus Lighting (lighting)*





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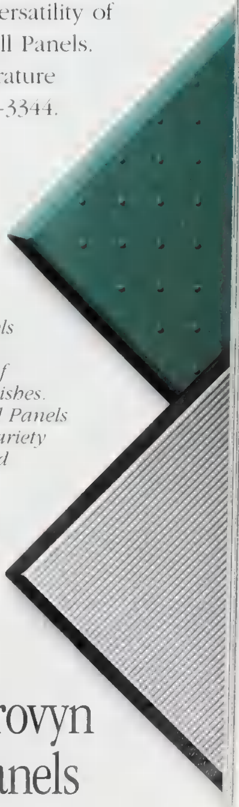

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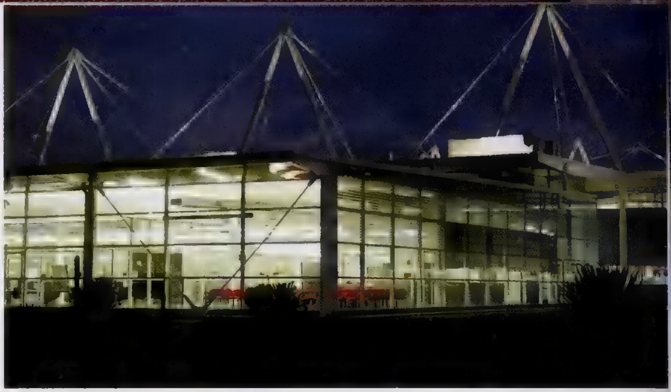
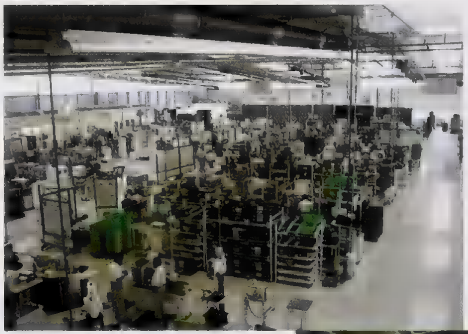


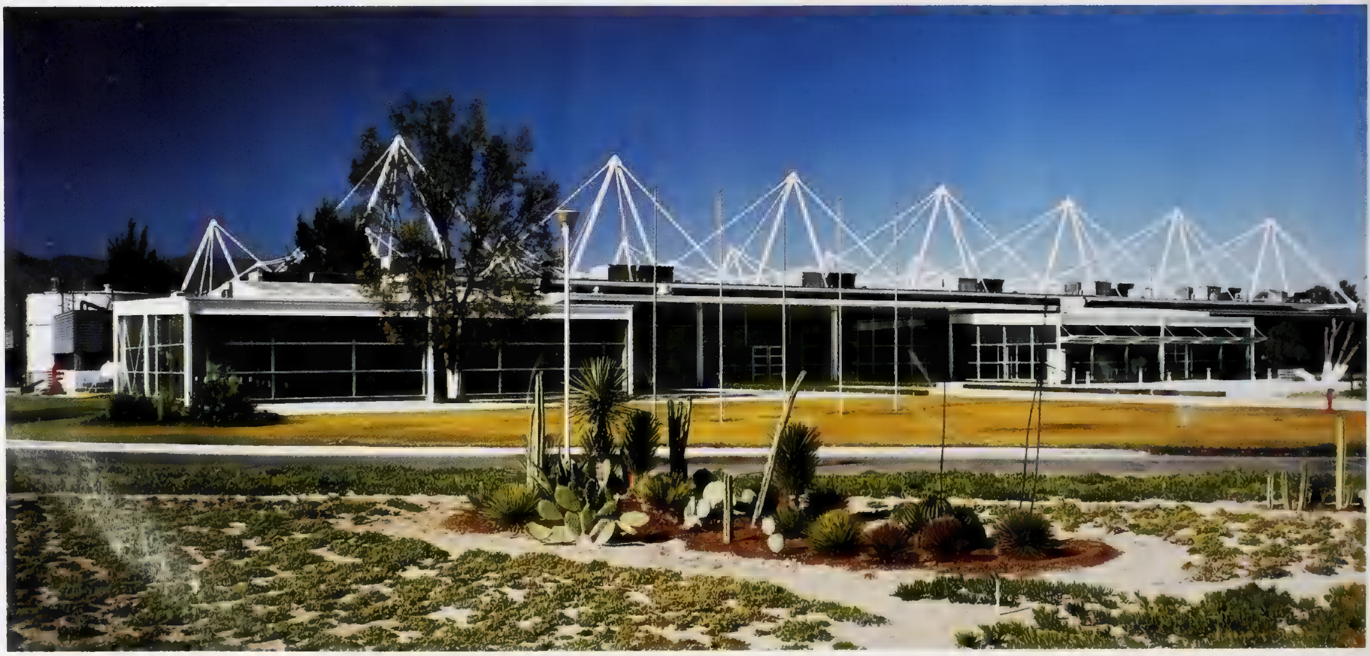
THE BUILDING AS A METAPHOR FOR THE OWNER'S PHILOSOPHY

Program: One of the world's largest suppliers of automotive equipment, Valeo saw an opportunity to enhance its production by responding to a major shift in auto production in Mexico and locating a plant in close proximity to its clients there. The company's decentralized structure, consisting of nine industrial operating units and more than 100 autonomous divisions, has created a unique corporate philosophy of equality and communication among workers by eliminating hierarchies and integrating departments. **Solution:** A new, 178,000-square-foot facility for the design, fabrication, and testing of electric motor parts for automobile manufacturers was created to foster and maintain the company's horizontal philosophy, to integrate previously separate divisions, and to accommodate expansion that has already doubled the size of the facility. The project was designed and constructed in 10 months at a cost of $66 per square foot. Featuring a long-span, column-free structure using a modular tensile exoskeleton, the architects demonstrated that the increased cost of such a structure would be offset by the resulting efficiency. The plant has allowed the company to grow and consolidate its operations and has supported its mission to find innovative methods to increase production and reduce costs. Also, its 1 percent turnover rate for employees is considered a benchmark in Mexico.



> **"It's a clean plant, it's well-organized, exceedingly flexible. The architecture really feeds off that and then reinforces it."**
>
> ***—DAVID THURM, V.P., REAL ESTATE DEVELOPMENT, NEW YORK TIMES***

Project: *Valeo Electrical Systems, San Luis Potosi, Mexico*
Architect: *Davis Brody Bond*
Client: *Valeo*
Key players: *Arup (engineers); Lidxi Biaani (lighting); Contreras y Asociados (general contractor)*



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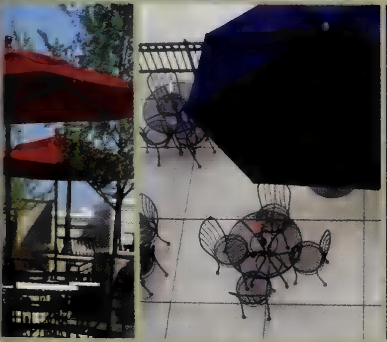

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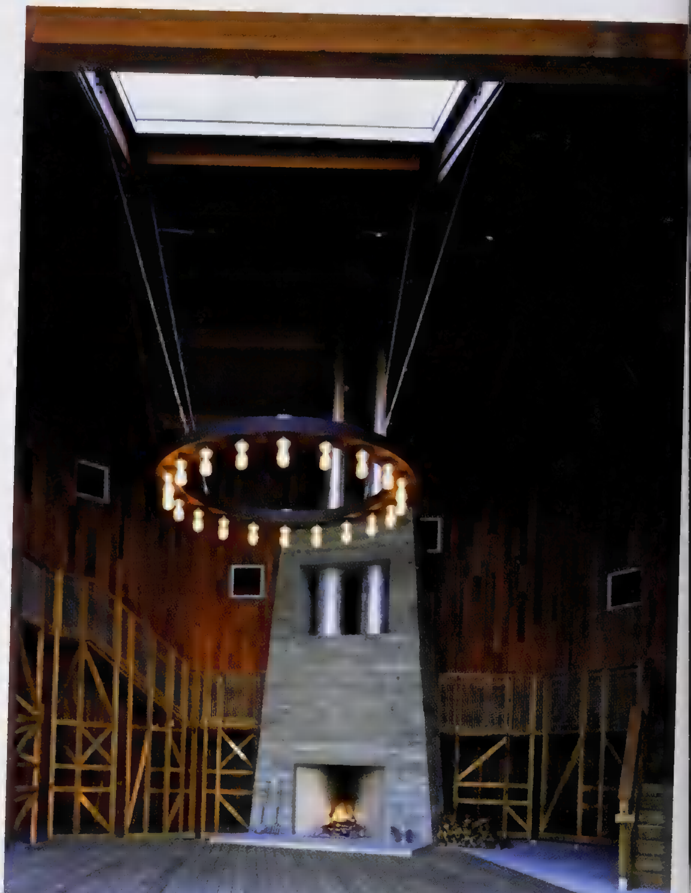
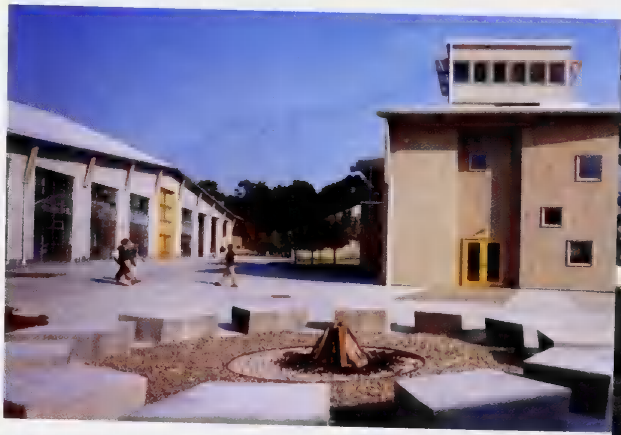
A BUCOLIC CAMPUS CATERS TO YOUNG TRENDSETTERS

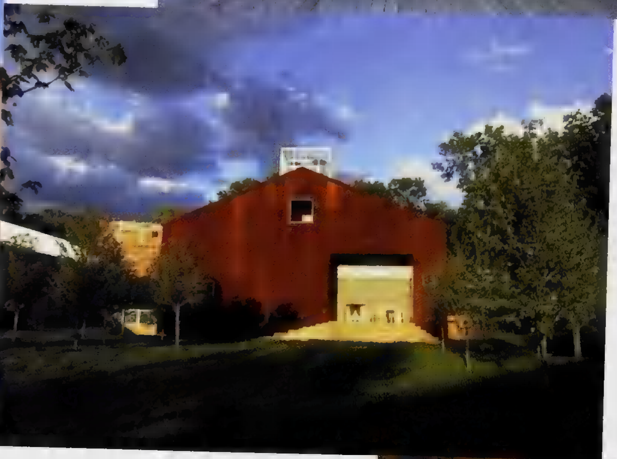
Program: The original offices for Abercrombie & Fitch were generic and nearly windowless; their identity was not expressed beyond a sign in the lobby and a few images placed around the interior. Both client and architect wished to create an environment for employees where they would experience a world that both reflected the brand and would play a significant role in shaping it. They sought a workplace to stimulate interaction and innovation, a place of natural beauty that could be used to recruit talent.

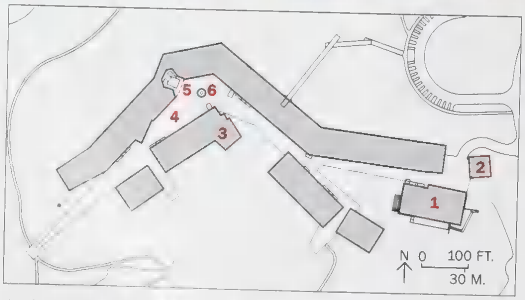
Solution: A rural site in Ohio with 300 acres of woodland was selected for the new headquarters. Its natural beauty was the perfect setting for offices that could mingle with the landscape and offer scenic views to the outside. From the parking lot to the offices, employees weave their way on narrow wooded paths that lead to a boardwalk and wood-trussed entry. At the entrance, one experiences the character of the new headquarters' brand. Open workstations promote interaction among staff and encourage collaboration. Work areas are designed as an easily adapted kit of parts. Areas for work and play coexist throughout the campus. The offices are open-ended, informal, hip, and democratic. The project has enabled the client to grow and has become a sought-out place to work among young trendsetters.

> **"Abercrombie & Fitch epitomizes the trend of capturing the brand—which here is clearly a youth brand—in the design work."**
>
> *—TIM O'BRIEN, V.P., REAL ESTATE, FORD MOTOR COMPANY*









1. *Rusty barn/dining*
2. *"Tower of Power"*
3. *Tree house*
4. *"The Street"*
5. *"The Bite"*
6. *Fire pit*

Project: *Abercrombie & Fitch Headquarters, New Albany, Ohio*
Architect: *Anderson Architects; NBBJ (associate architect)*
Client: *Abercrombie & Fitch*
Key players: *M-Engineering (mechanical, electrical)*

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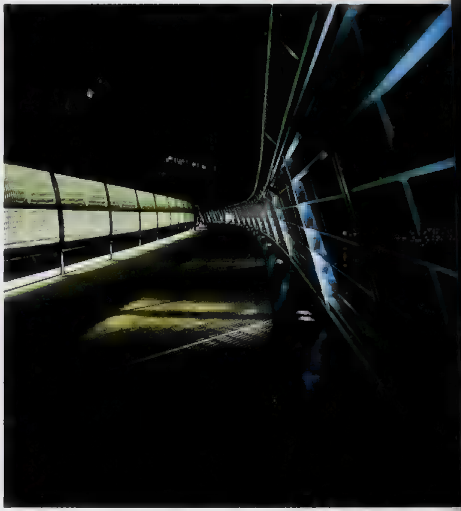
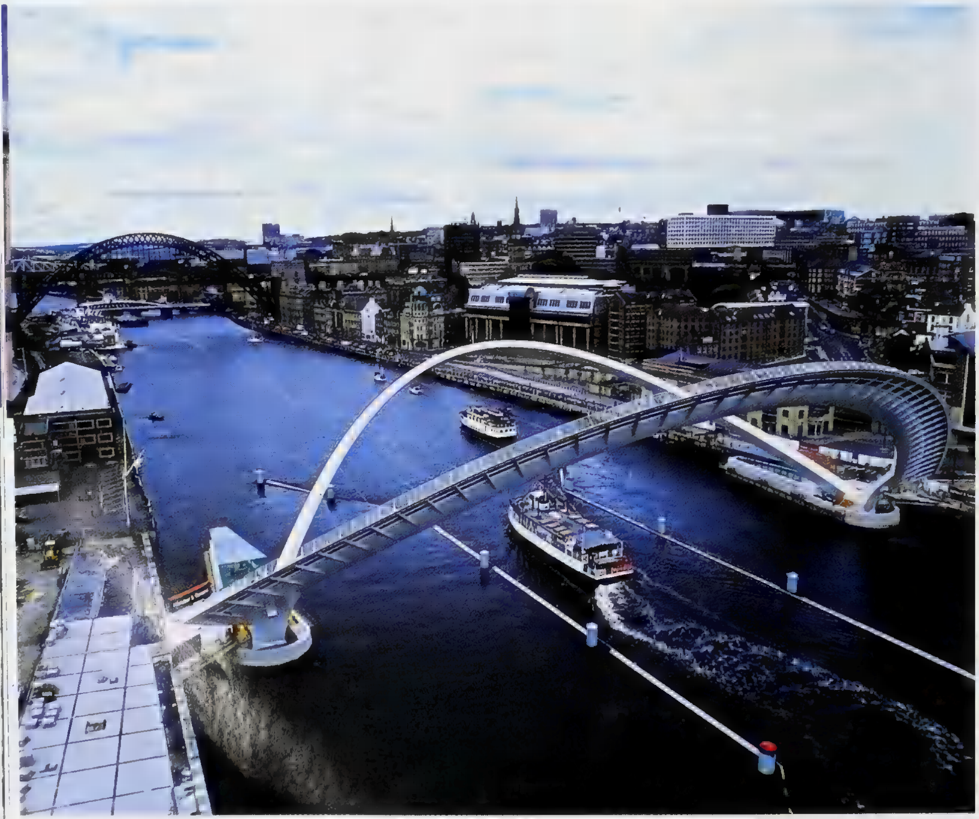
BEAUTY AND INNOVATION ARE UNIFIED IN THIS GRACEFUL BRIDGE

Program: Through an international competition, an architect/engineer team was chosen with the specific intent of making a bridge that would attract worldwide attention. The city of Gateshead, England, sought an enduring image to regenerate the area, attract local support and media coverage, and embody something unique and innovative to raise its profile on the international stage. The solution needed to fulfill the complex functional, operational, contextual, and visionary aspirations of the client, who was driven by the need to succeed over competing projects for essential and limited national funding.
Solution: Linking Newcastle with Gateshead over the River Tyne, this bridge provides a footpath and cycle way joining ambitious new arts and cultural developments on the south bank of the Tyne, called Gateshead Quays. Gateshead Millennium is the world's first rotating bridge and has generated worldwide interest because of its unique design. It has also received significant media coverage and was noted as one of the innovations of the year in *Time Magazine*. Local pride and continued international interest have caused the client to state that the bridge has unequivocally fulfilled and even surpassed each of its established objectives. But the ultimate measure of appreciation is that thousands of people cross the bridge each week despite the present lack of any obviously compelling destination on the other side.

"As an act of kinetics, it's quite extraordinary; and as a thing sitting in place, it's absolutely beautiful."—*JON JERDE, FAIA, CHAIRMAN, THE JERDE PARTNERSHIP*





Project: *Gateshead Millennium Bridge, River Tyne, England*
Architect: *Wilkinson Eyre Architects*
Client: *Gateshead Council*
Key players: *Gilford and Partners Consulting Engineers (engineers); Kvaerner Markham (mechanical, electrical, and hydraulic); Harbour & General/Volker Stevin (general contractor)*

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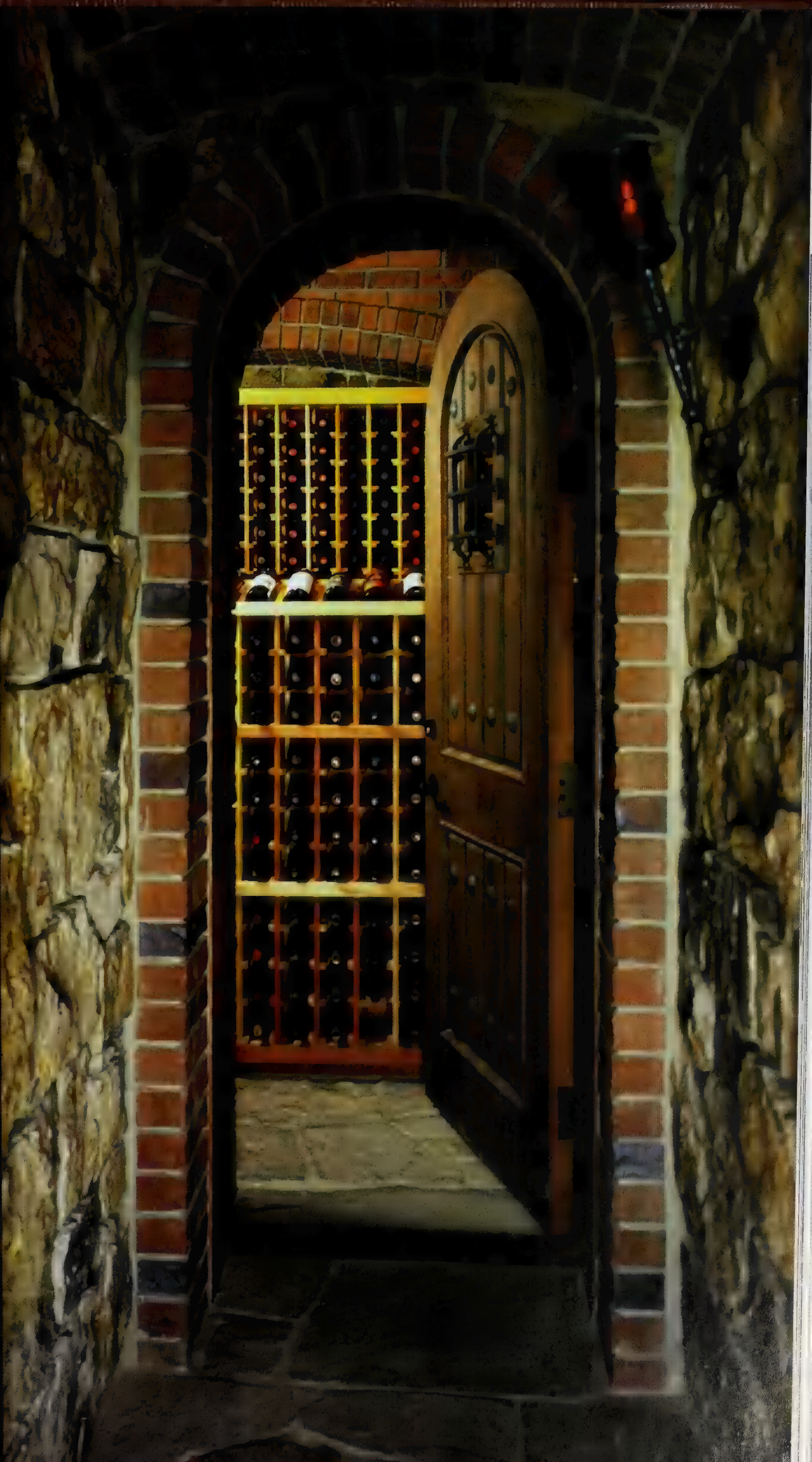
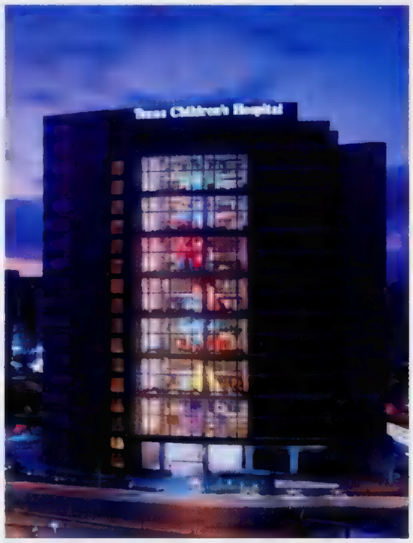


A HOSPITAL CELEBRATES CHILDREN WITH PLAYFUL, COLORFUL WHIMSY

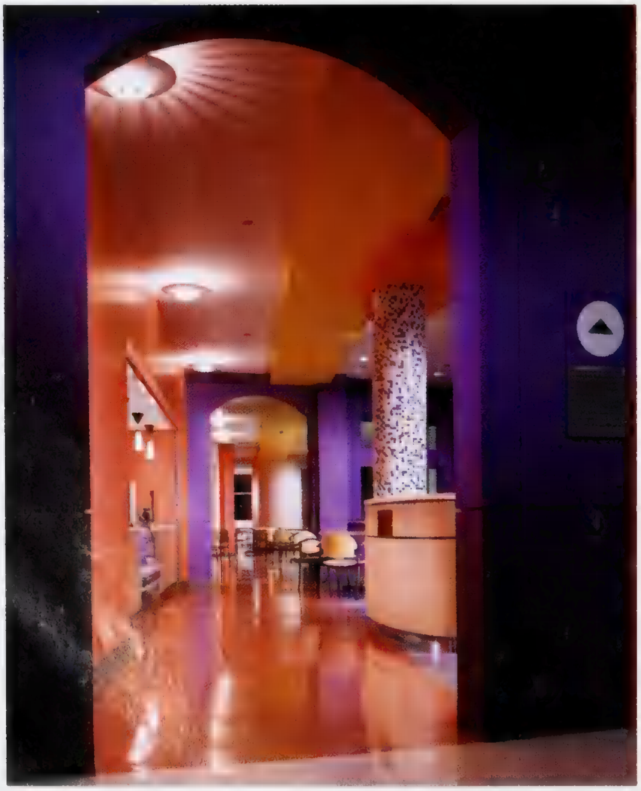
Program: This 41-year-old pediatric institution realized it needed a new facility to meet its business goals in a changing health-care environment. In addition, it wished to improve conditions for its young patients. The client sought increased space flexibility for growth and efficient use, easy conversion of space to accommodate future needs, better wayfinding, an increase in the productive use of staff, and satisfied customers. Five distinct groups were instrumental in the decision-making process—the administrators, physicians, user groups, parents, hospital trustees, and architects.

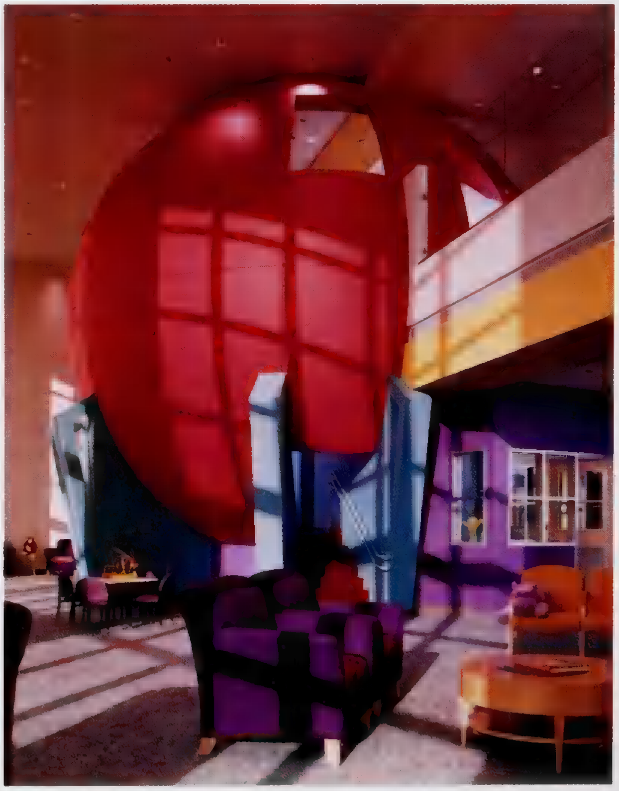
Solution: Clinic floors are organized around a two-story, color-coded play area, featuring bold geometric shapes, which assists with wayfinding and also serves as the central check-in and recreation area for children. The team redefined work groups and reengineered staff roles to improve efficiency. Flexibility for incremental growth is incorporated into the design. Offices are on the floors above or beneath clinics, allowing caregivers ease of movement among them. Clinical spaces work like time-shares, with several physicians utilizing the same rooms during different periods. Overall exam-room utilization increased from 41 to 60 percent in the new facility. The percentage of patients completing check-in/out in less than 15 minutes increased from 69 to 94 percent, and annual growth has exceeded 9 percent in the first six months after opening.

"This project represents a tremendous effort to make a difference; to celebrate the kids who are the patients."—*CATHY SIMON, FAIA, PRINCIPAL, SMWM*



Project: *Texas Children's Hospital Clinical Care Center, Houston*
Architect: *FKP Architects*
Client: *Texas Children's Hospital*
Key players: *Facilities Design International, and McCoy (interior designers); Walter P. Moore, and Burns DeLatte McCoy (engineers); W.S. Bellows Construction (general contractor)*





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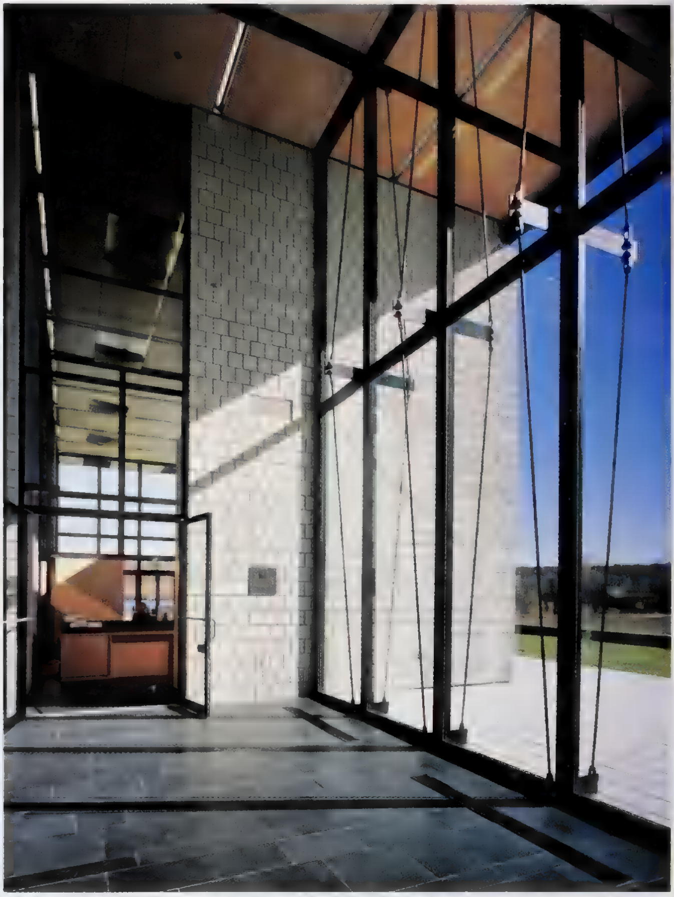
A BUILDING THAT PROCLAIMS THE SPIRIT OF ENTERPRISE

Program: Trumpf Customer and Technology Center is the American subsidiary of a European-based manufacturer of high-tech laser machine tools. Originally intended as a training center for machine operators, the acceleration of sales in the U.S. prompted the decision to change the program to include client demonstration and sales. The new building lies within a suburban industrial office park, where a large pond and extensive natural wetland areas are maintained. To serve a customer center, it was imperative to improve the pedestrian circulation from the existing buildings to the new one.
Solution: The building is large enough to demonstrate the company's entire range of products and services and includes a presentation theater, employee cafeteria, dining for clients, a lobby, conference rooms, and offices. A new central walkway that terminates in a terraced stair to the pond's shore unites the separate buildings of the site into a campuslike assemblage and improves circulation. A hierarchical office structure has been replaced by a design that emphasizes collaborative work and maximizes a larger cross section of the company's talent. Each month, more than 20 groups of customers visit the center, and three out of every four purchase a machine or service from the client—a 50 percent increase from the time prior to construction of the facility.

"The building is a classical Miesian pavilion, surrounded by support space, brought into the 21st century." —*STEVE GOLDBERG, FAIA, PARTNER, MITCHELL GIURGOLA ARCHITECTS*



Project: *Trumpf Customer and Technology Center, Farmington, Conn.*
Architect: *Barkow Leibinger Architects; Casle Corporation (associate architect)*
Client: *Trumpf America*
Key players: *Szewczak Associates (structural); Quinlan, Giannoni and Livingston (mechanical); Casle Corporation (general contractor)*

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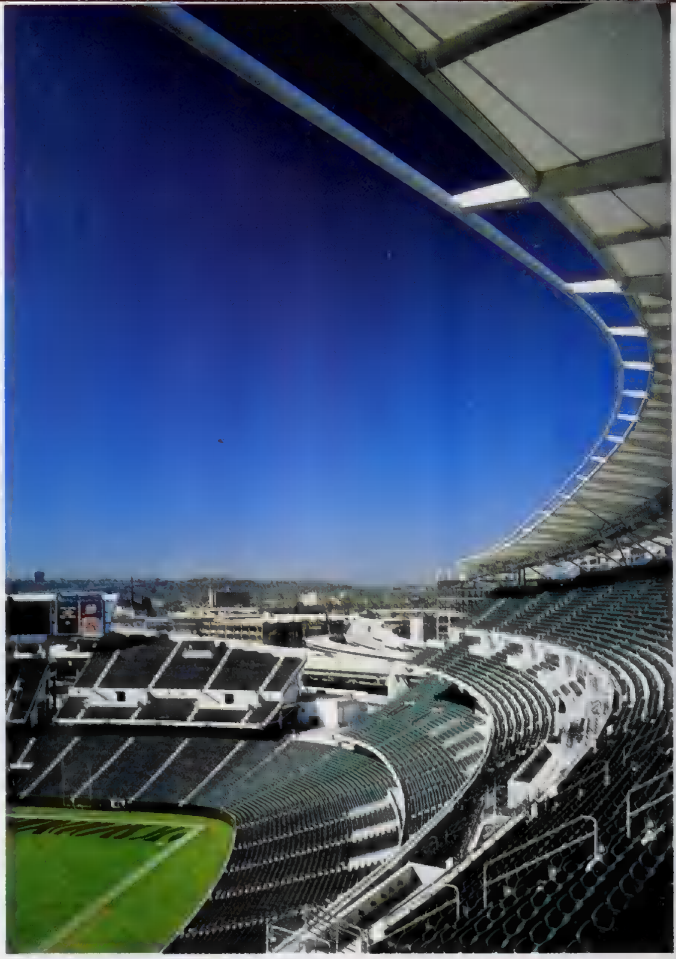
A STADIUM SERVES AS A CENTERPIECE OF COMMUNITY DEVELOPMENT

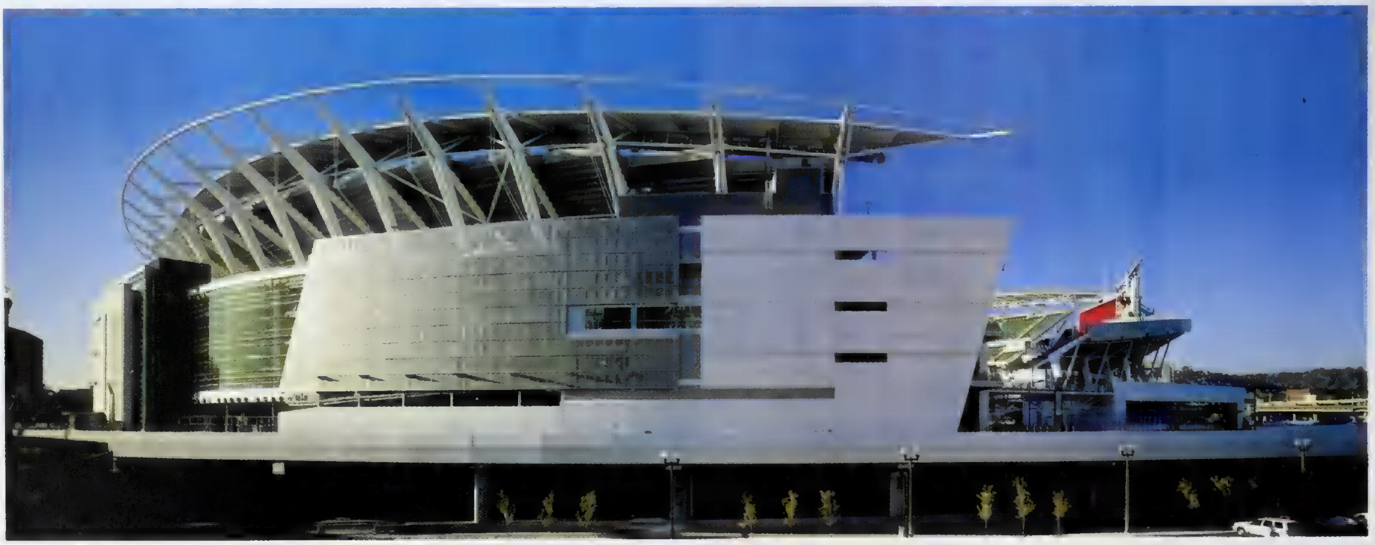
Program: The client owned a professional sports team whose existing home facility in Cincinnati was among the smallest and least financially viable in its league. Retrofitting the old stadium was ruled out, so a new one was proposed that would meet current operational and economic needs, provide flexibility to accommodate future changes, and be architecturally significant, serving as a cornerstone of the city's economic and community well-being.

Solution: A team consisting of the client, their government partner, the construction manager, and the architect worked closely together over a two-year period leading up to construction. The remarkable building that resulted from this process provides the functions necessary to support events of all sizes, accommodates the team's year-round programs, and includes offices for the owner. The design incorporates 116 suites and six party suites, as well as a number of clubs, which serve as spectacular gathering places for the hundreds of events hosted each year. Sight lines within the 67,000-seat stadium are excellent, and there are no bad seats. Visible from afar, the stadium's striking cantilevered, steel-structured roof, clad with translucent fabric that covers the upper deck, is visually awesome.

"The stadium is a cornerstone of economic development and community activity in Cincinnati."

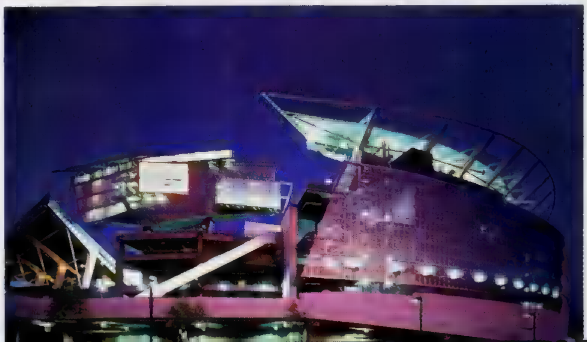
—TIM O'BRIEN, V.P., REAL ESTATE, FORD MOTOR COMPANY





Project: *Paul Brown Stadium, Cincinnati*
Architect: *NBBJ; Glaser Associates (associate architect)*
Client: *Cincinnati Bengals*

Key players: *Arup (structural); Flack & Kurtz (mechanical, electrical); Acoustic Dimensions (acoustics)*



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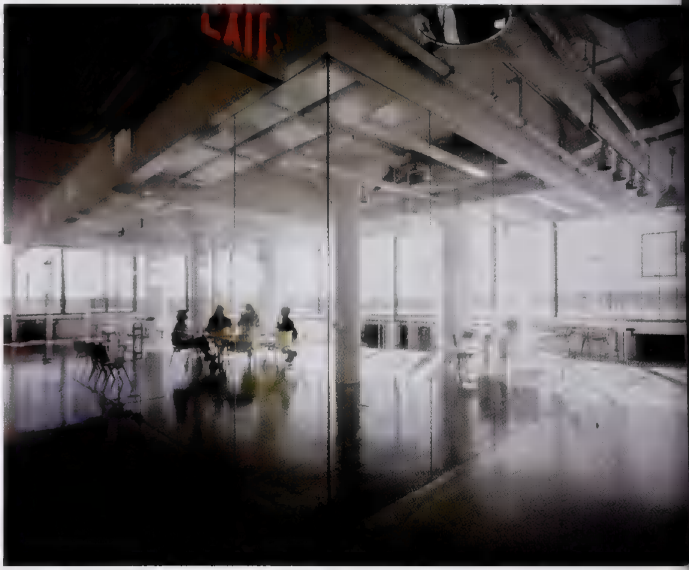
Seven outstanding finalists prove that good design pays

THEIR PROGRAMS VARY, THEIR LOCATIONS ARE DIVERSE, BUT EACH FINALIST CONVEYS IN A UNIQUE WAY HOW DESIGN ENHANCES BUSINESS

For the second year, RECORD is featuring finalists in its awards program, recognizing their significant merit in fulfilling the award criteria. The seven projects featured here join the 11 winners in providing a portrait of effective design for business. The criteria include components of path and result—each finalist participated in a distinguished architect/client collaborative process and achieved definable goals of excellence through fulfillment of the clients' objectives. Most awards programs focus solely on the merits of design in their selection process. This one is different: It leans heavily on how design promotes measurable business results in a variety of definable ways relevant to the clients, for whom architecture becomes a means to their success. Juror David A. Thurm, V.P. of real estate development at The New York Times company, says, "The award was hardwired from the very start that the business objective would be an important factor as to why the award was given."—*Jane F. Kolleeny*

THIS WAREHOUSE ATELIER IS CAST IN LIGHT AND AIRY TONES

Phenomenal growth has occurred over the 12-year existence of this well-known international media company. All of its facilities in New York City were designed by its architect, Daniel Rowen, fostering a rare, collaborative spirit. The team was faced with the challenge of consolidating a group of disparate offices into one location—a former warehouse building occupying a full city block. Since suitable contract furniture was unavailable, 400 workstations were imaginatively designed by the architect, in shades derived from the client's paint products. This extraordinary solution comprises bays of workstations that function like ateliers for the company's various design groups. The photographic studios are considered among the best in the city. Visitors are always impressed by both the scale of the place and the space itself—the light, the openness, and its unencumbered views of the river and city.



Project: *Martha Stewart Living Omnimedia, New York City*
Architect: *Daniel Rowen Architects; Berger Rait Design Associates (associate architects)*
Client: *Martha Stewart Living Omnimedia*
Key players: *Ambrosino DePinto & Schmieder, and Severud Associates (engineers)*

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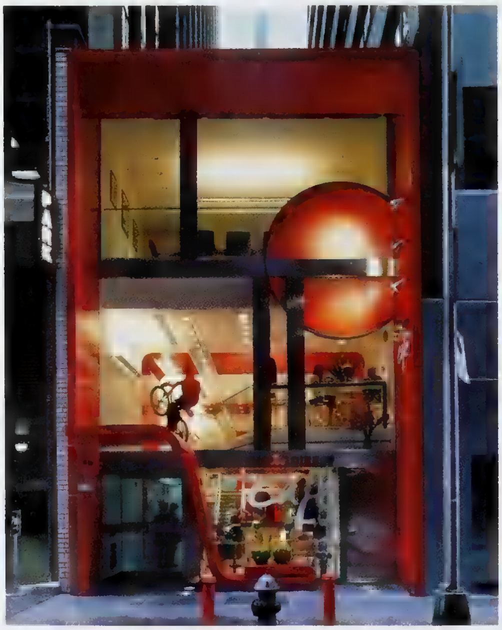
SPECULATIVE OFFICES SUCCEED ON THE BANKS OF THE SEINE

The client sought to develop a high-end speculative office complex from four previously disparate but adjacent buildings, that would become an identifiable unit for an international developer and its tenants. The introduction of green elements such as natural lighting, sustainable materials, and temperature-regulating curtain walls ensure tenant satisfaction. Amenities such as a restaurant, cafeteria, and conference facilities attract and retain tenants and, in turn, their employees. A bold landmark on the banks of the Seine, the complex was redefined and unified through an arch and the reskinning of the building's walls with glass printed with images of the river's waters. All of the space was leased to premium tenants before occupancy permits were granted, spelling a huge success for the client. Users are unilaterally satisfied with the fine quality of their new home.

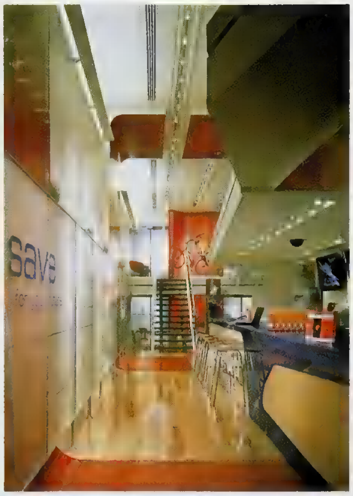
Project: *Arcs de Seine, Paris*
Architect: *Skidmore Owings & Merrill; Alexandre et Sandoz (associate architect)*
Client: *HRO Group*
Key players: *Severud Associates, and Cosentini Associates (engineers); Fougerolle (general contractor)*



Project: *Ing Direct, New York City*
Architect: *Gensler*
Client: *Ing Direct*
Key players: *Marino Gerazounis & Jaffe Associates (engineers); CIC Construction (general contractor); Showorks (audio-visual consultant)*

A TRENDY INTERNET CAFÉ ENTICES NEW BANK CUSTOMERS

In an effort to be noticed, ING Direct entered the competitive U.S. banking market with an innovation: In their first Midtown Manhattan bank, they replaced the expected row of tellers with an upbeat café staffed by trained bankers and featuring coffee, soft drinks, and food, with free Internet access, newspapers and magazines, and branded merchandise in a modern, trendy setting. The scale and feel of the café and the colorful neon orange exterior draws potential customers inside. The success of the approach is measurable—in the first quarter of the year business grew from $4 billion to $7 billion. Underlying this achievement is a highly effective relationship that evolved between client and architect.



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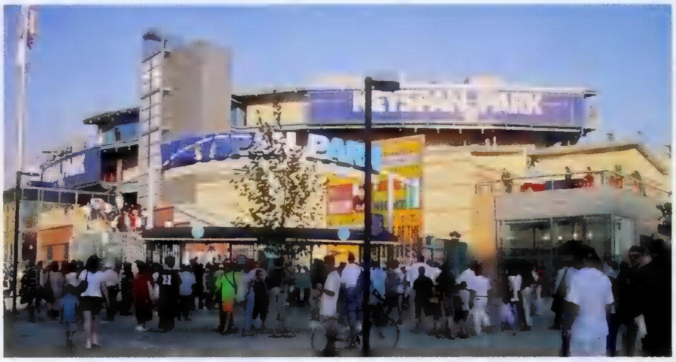

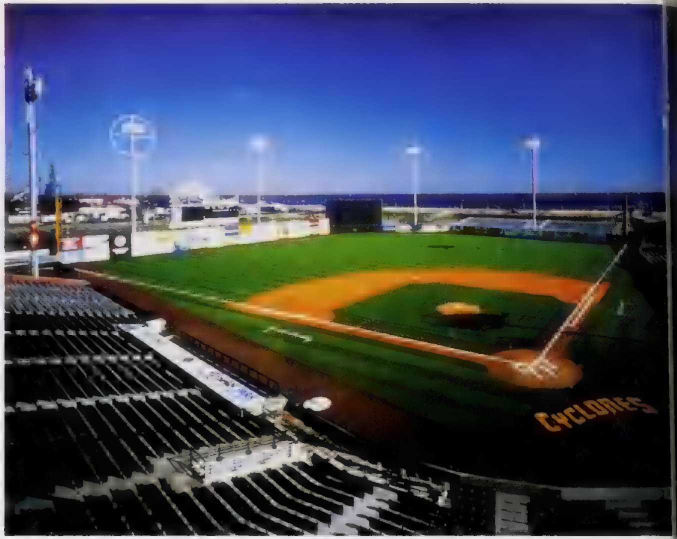

THIS STADIUM BREATHES NEW LIFE INTO HISTORIC CONEY ISLAND

Sited next to Coney Island, a seasoned seaside amusement park in Brooklyn, New York, this stadium captures the informal, whimsical, and festive spirit of the early-20th-century architecture of the area in a state-of-the-art, 21st-century sports facility. Key to success was the high degree of project coordination among the public/private members of the design team. Completed on schedule and within budget, the facility was treated as an instant landmark in the neighborhood. Fans have repeatedly applauded the convenience and comfort of the stadium, and its street-level retail space is almost fully leased. Through bold graphics, access to the boardwalk, and concessions on the concourse level, the surrounding area has been reinvigorated.

Project: *KeySpan Park Stadium, Brooklyn*
Architect: *Jack L. Gordon Architects*
Client: *New York City Economic Development Corporation and Brooklyn Baseball Corporation.*
Key players: *Ysrael A. Seinuk (structural); Keyspan Energy Management (mechanical, electrical); Turner Construction (general contractor)*

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Realizing that managers do not necessarily make leaders, this Fortune 500 company sought to provide an institution to cultivate leaders of the future. Employees at all levels in the company come to this campus to build better networks, forge stronger relationships, trade ideas, and share experiences. The design team toured several of the best leadership centers in corporate America and planned a flexible building that could morph over time as the curriculum evolved. A former Harvard Business School faculty member acted as the team's learning-environment consultant. Success was instantaneous—when the center opened, the company's earnings, stock price, sales, and backlog all went up. Employee satisfaction increased, and the center has been benchmarked by other companies around the world. Demand is so high that a new addition to the facility is under way.

Project: *The Boeing Leadership Center, St. Louis*
Architect: *Hellmuth, Obata & Kassabaum*
Client: *The Boeing Company*
Key players: *Ross & Baruzzini (mechanical, electrical); David Mason & Associates (civil); J.S. Alberici Construction Company (general contractor)*

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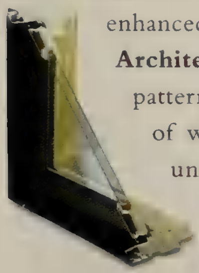

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VIENNA'S HISTORY IS PRESERVED AND A NEW URBAN CENTER BEGUN

When four industrial gasometers (storage tanks for Vienna's gas supply) became obsolete, they left huge masonry shells behind. In this project, the landmark shells were converted into a new urban center that includes apartments, a youth hostel, a performance hall, shopping mall, movie center, and more. Utilizing complex technical solutions, the architect devised an entirely separate concrete structure within the restored masonry cylinder to support 13 stories of apartments, shops, and offices, and a massive circular foundation wall enclosing a 3,000-seat auditorium. All housing units were rented by the completion of the project, and there has been only positive feedback from tenants. In addition, the event hall has been commended for its functionality. But most notably, the exceptionally beautiful and unusual architecture of this project spells success, putting this small town 10 minutes from the center of Vienna distinctly on the map.

Project: *Gasometer B, Simmering, Vienna*
Architect: *Coop Himmelb(l)au; Prix & Swiczinsky GmbH*
Client: *GPA/WBV, Wohnbauvereinigung der Privatangestellten*
Key players: *Voitl/Gerstl/Habau (general contractor)*

FINELY HONED OFFICES USED AS A SALES TOOL FOR BUSINESS

This high-end residential construction company near Aspen, Colorado, sought to provide a quality workplace that reflects its stature as one of the finest construction firms in the area. As a result of the client's industry, an unusually close collaboration among design team members occurred. With client Hansen included at the design table, providing fabrication expertise and instant samples, mock-ups, and cost evaluation, many of the encumbrances to innovation were removed and the team was able to concentrate on fresh solutions. Because the space being created was for the business of construction, every aspect of the project was subjected to an unusual level of professional scrutiny from both the design team and the client. Functionally, the new space accommodates the frequent arrival of subcontractors and the inquisitive visits of clients, successfully balancing openness and privacy.

Project: *Hansen Construction Office, Aspen, Colo.*
Architect: *Harry Teague Architects*
Client: *Hansen Construction*
Key players: *Harry Cole and Steve Peightal (engineers); Hansen Construction (general contractor)*

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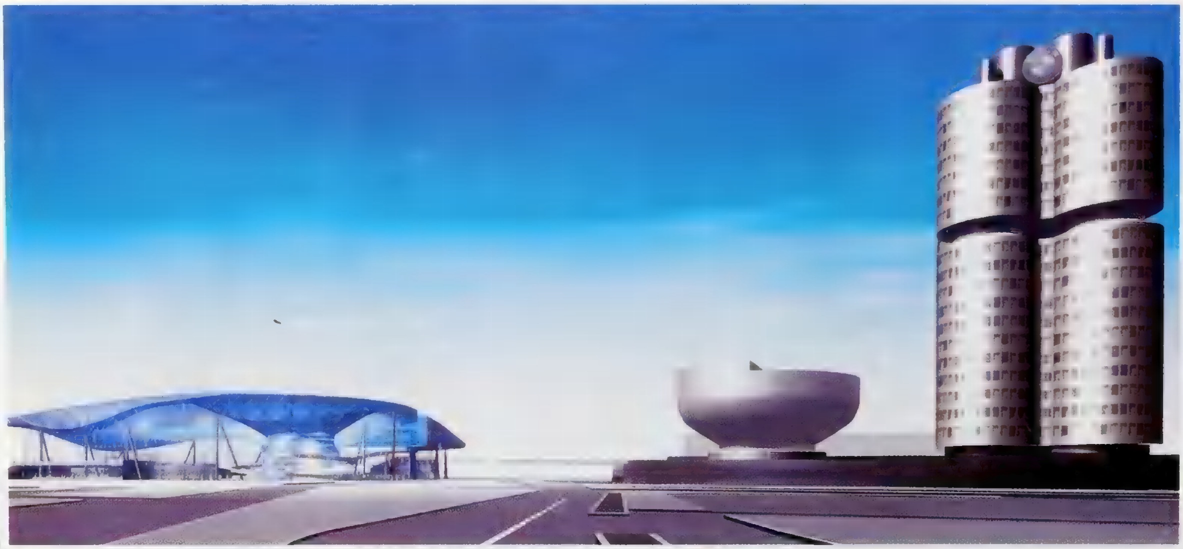
Editors' choice: **Two unbuilt projects** that reach into the future with innovation

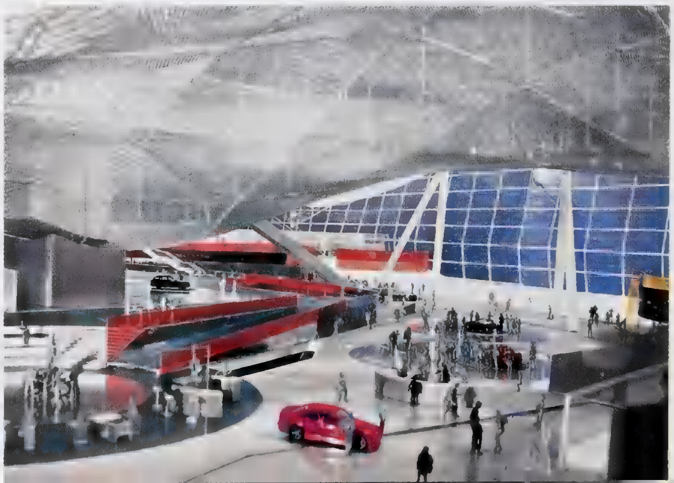


Project: *BMW Event and Delivery Center, Munich, Germany*
Architect: *Coop Himmelb(l)au; Prix & Swiczinsky GmbH*
Client: *BMW Group*

"This remarkable structure promises to envelop visitors in a rich spatial experience that should help the client project itself as a company with its eyes on the future."

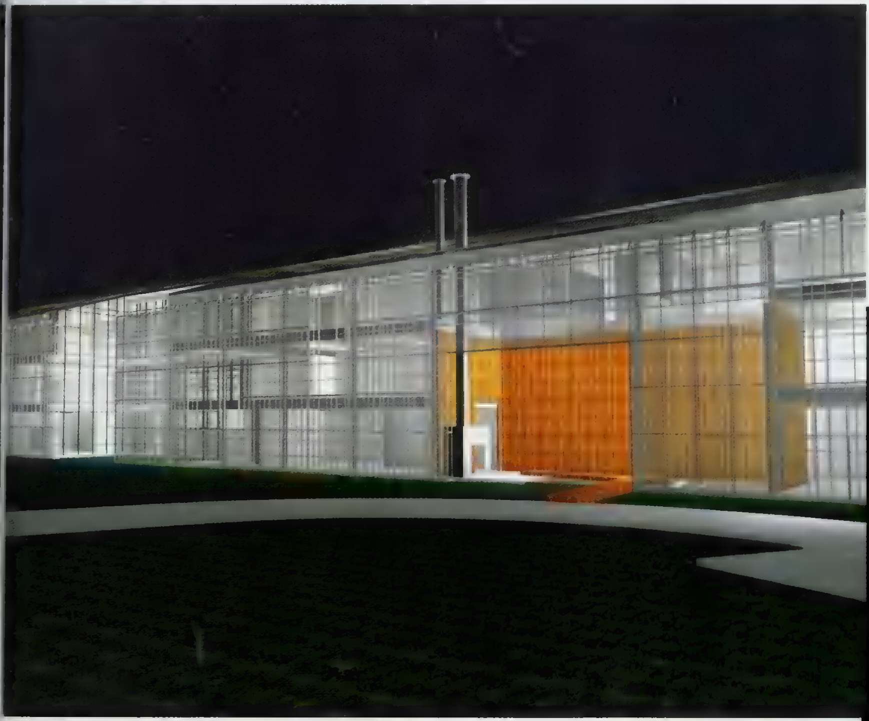
A DRAMATIC SCULPTURAL ELEMENT DISTINGUISHES THE BMW BRAND

Scheduled to open in 2004, this event center and showroom for BWM will serve as a focal point for vehicle delivery. Through its design, the building unifies the nearby BWM Headquarters tower and the adjacent Olympic Park into a cohesive whole. Its distinguishing features include a sculptured roof element floating over a flexible marketplace, creating a remarkable landmark of unique, undulating forms. The shape of the roof is influenced by the functions below, forming a stage with changing heights for the varied uses of the building. The roof itself is anchored to the ground at the south-east edge of the site and is transparent, mitigating sunlight and energy. The center contains a multifunctional event hall, exhibition spaces, shops, restaurants, and cafés.



The following two unbuilt projects constitute the Editors' Choice, an unbuilt-project category that was begun in 2001 to coincide with the Business Week/Architectural Record awards program. This is the first year RECORD is publishing works in this category, which is so named since editors of both magazines decide which entries to publish. By disseminating these selections, we give our readers an early look at some of the excellent projects in the pipeline for tomorrow. Since these projects cannot be measured in the same way that built projects can, the emphasis here is on innovative design. Both projects selected are clearly innovative, and each contributes strongly to the corporate image of the client, a theme that was evident in many of the winning entries. —*Jane F. Kolleeny*

"While offering an elegant, modern interpretation of the industrial shed, this design provides office workers with plenty of access to daylight and outdoor spaces."



A UTILITARIAN WAREHOUSE CONVEYS A SPORTSMAN'S AESTHETIC

This proposed warehouse building will serve as a headquarters for a new easy-lifestyle brand owned by clothing manufacturer Abercrombie & Fitch and will be added to the company's existing office campus (featured as a BW/AR awards winner on page 102). Although connected to the campus visually and in terms of materials, the new building is quite different. In the same manner that stables, sheds, barns, and other outbuildings help shape the landscape of large estates, this 110,000-square-foot structure will serve as a background element. Light will filter inside through a perforated metal scrim, and the building will feature exterior courtyards and second-floor porches. Exterior materials include a metal roof and corrugated-concrete-panel skin; interiors will reflect the retail store's palette of dark woods and metals.

Project: *Hollister Headquarters, New Albany, Ohio*

Architect: *Anderson Architects*

Client: *Hollister*

Key players: *BBC&M Engineering (geotechnical); EMHT (civil); Lantz, Jones, Nebraska (structural); M-Engineering (mechanical, electrical); Elford Construction Services (general contractor)*

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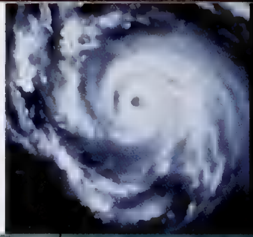

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PLACE:	Renaissance Charleston (Marriott) 68 Wentworth Street Charleston, SC 29401 Phone: 800-468-3571 *For room reservation & special rate refer to McGraw-Hill Group.*

Scheduled Program

2:00 P.M.	**Welcome and Opening** **Robert Ivy** Editor-in-Chief, Architectural Record
2:15 P.M.	**AIA/CES Program: Code Demands for Impact-Resistant Glass** *Sponsored by Weather Shield Windows & Doors*
3:30 P.M.	**Guest Speakers** **Orrin H. Pilkey**, Director "Program for the Study of Developed Shorelines," Division of Earth and Ocean Sciences, Duke University, along with renounded batik artist, **Mary Edna Fraser**. Discussion will focus on barrier island research and coastal management. Mr. Pilkey & Ms. Fraser have a Columbia University Press book due out in April titled: "A Celebration of the World's Barrier Islands."
4:30 P.M.	**Walking Tour of Charleston** Tour Subject: Charleston – Past and Present **Christopher Rose, AIA/ASID** *Christopher Rose Architects*
5:30–7:00 P.M.	**Cocktail Reception at Old Charleston Jail** *Sponsored by Weather Shield Windows & Doors*
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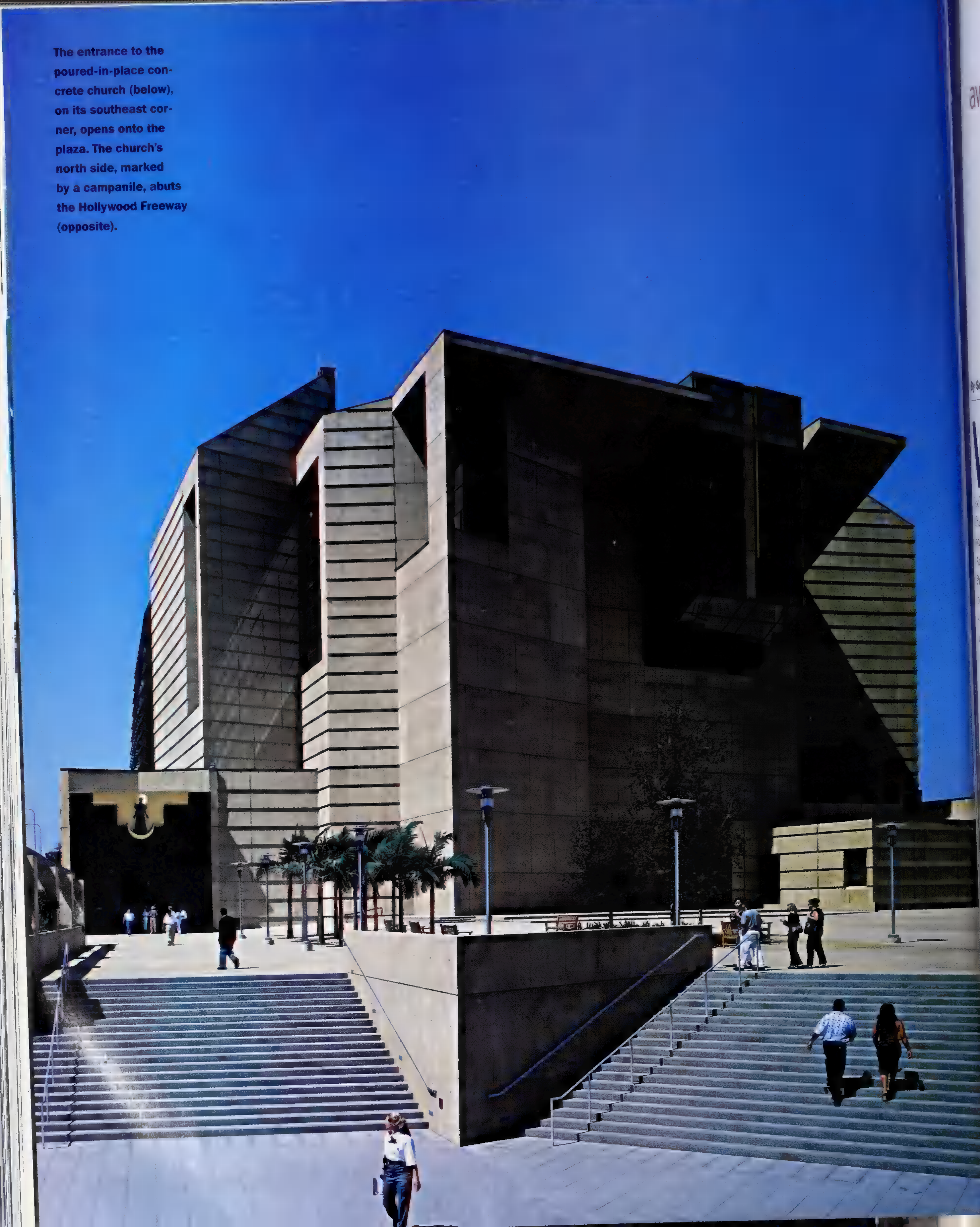

The entrance to the poured-in-place concrete church (below), on its southeast corner, opens onto the plaza. The church's north side, marked by a campanile, abuts the Hollywood Freeway (opposite).

awe

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By Suzann

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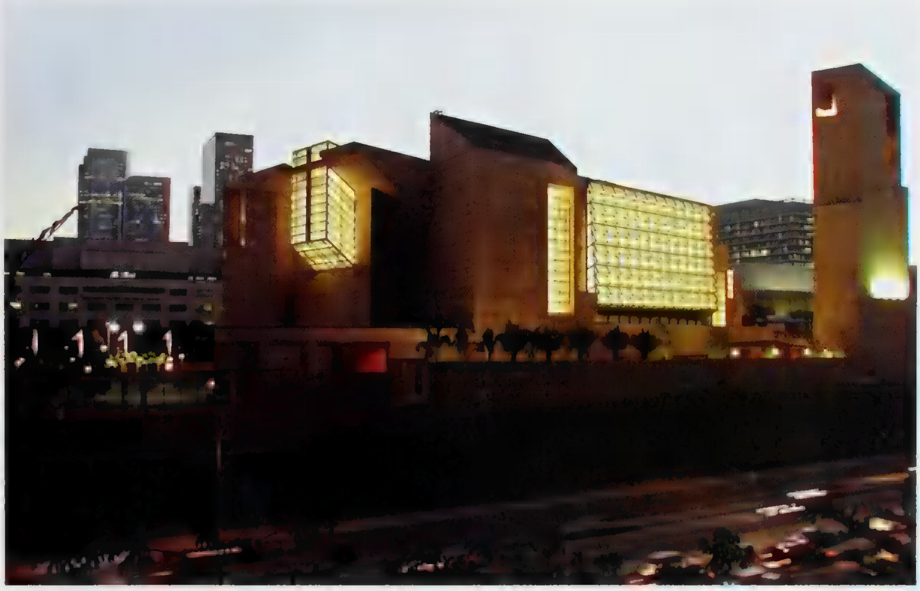
CRITICISM What makes a religious structure awe-inspiring? Rafael Moneo's design for the CATHEDRAL OF OUR LADY OF THE ANGELS provides a partial answer

By Suzanne Stephens



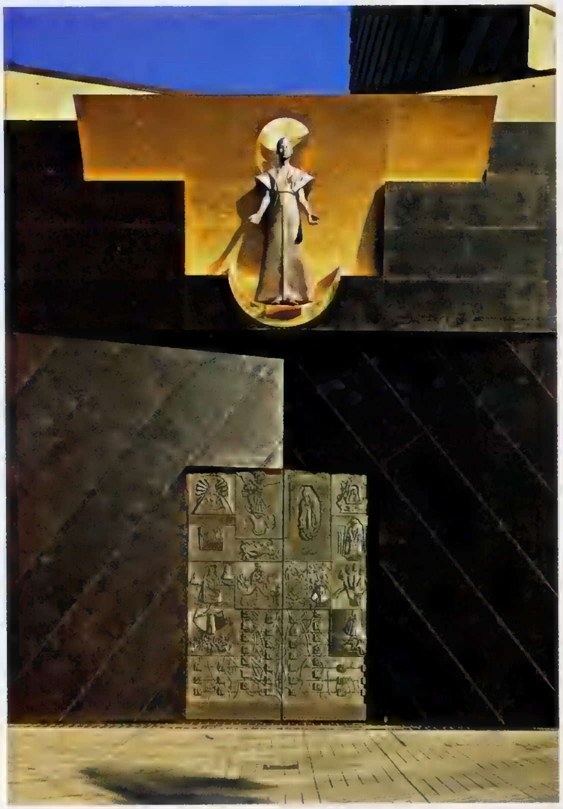
We often hear that the museum has replaced the church as the architecturally "sacred" space of contemporary times. Now it looks as if the church—at least the Catholic church—is trying to make a comeback. Not only has the Cathedral of Our Lady of the Angels in Los Angeles, designed by Pritzker Prize winner Rafael Moneo, just opened, but other high-profile churches are in the works, such as the Cathedral of Christ the Light, in Oakland, California, by Santiago Calatrava, and Richard Meier's Jubilee Church, in Rome.

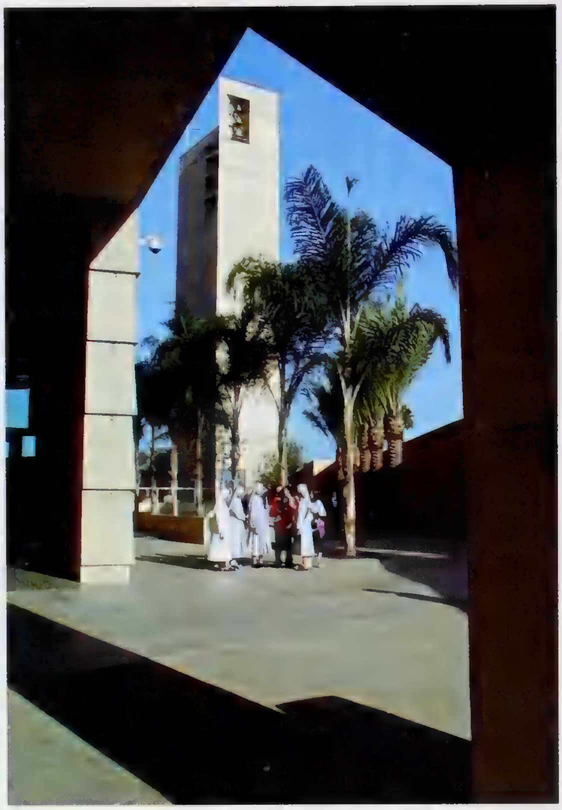
All of these monumental endeavors to embody spirituality in stone (actually concrete) come at a critical moment in the Catholic church. Apart from the sex-abuse scandals and attendant money-draining lawsuits, there is the ongoing debate within the church about designing houses of worship to be welcoming to parishioners. Since the Second Vatican Council's recommendations in the mid-1960s that the church become more of a communal space, many have taken this to mean that a church should look like a Quaker meetinghouse. In the case of the Los Angeles cathedral, the client, Cardinal Roger Mahony, voiced a concern that the building embrace its constituency of 4.1 million, which includes the poor and uneducated. But how do you make something awe-inspiring without being intimidating? Unlike advocates in the Catholic faith who argue the church should have a dome, or a spire, or at least a sense of verticality, Moneo has made it his mission to show that a transcendent aura can be embodied in earth-centered, Modernist, abstract forms. Moneo's efforts have been partially successful in certain areas, and naggingly unsuccessful in others. The cruelest irony is that some of the strongest aspects of his scheme are undermined by the religious art commissioned for the building.

Working with executive architect Leo A Daly and Morley Builders, Moneo came up with a monumentally scaled, skillfully crafted concrete aggregate of squat blocks and single-pitch roof elements, some of which are 128 feet high. Geometrical chunks coalesce, horizontally articulated by an overlapping shingling effect of the concrete walls creating shadow lines, and serrated glazed carapaces over the alabaster windows. From certain angles, the forms yield a forceful, calm drama; from others, however, the exterior appears deadeningly clunky in its massing. Similarly, the hue of the concrete depends on the time of day. In the intense noontime sun, the evenly tinted tan concrete is drably monochromatic; in the morning or late afternoon, it can take on an effulgent, pinkish hue. In spite of its impressive scale, the church does not sufficiently proclaim its symbolic role as a cathedral for the largest archdiocese in the nation. Having a campanile and a cross limned against a projecting alabaster bay is not enough to imbue the building with a sense of being a powerful, sacred space. Probably for this reason, the comments by the public (and some critics) that it looks like a fortress, a power plant, or one of the city's chunky retail malls, is relevant: The question is, what should a cathedral look like?

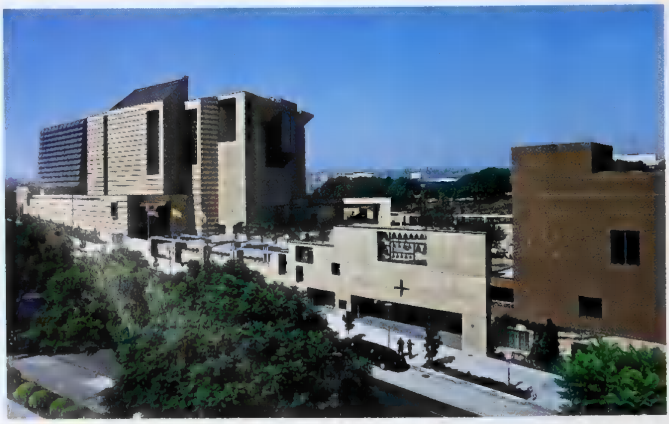
The issues raised are typological, something that Moneo, the chair of architecture at Harvard's School of Design from 1985 to 1990, has addressed before. In 1978, writing in *Oppositions*, Moneo argued that an

Project: *Cathedral of Our Lady of the Angels, Los Angeles*
Client: *Roman Catholic Archbishop of Los Angeles, Cardinal Roger Mahony*
Design architect: *Jose Rafael Moneo Arquitecto—Jose Rafael Moneo, principal; Hayden Salter, David Campbell*
Executive architect: *Leo A Daly—Roy Follmuth, principal in charge; Nick Roberts, project manager; John Williams, senior project architect; David Arredondo, project architect*
Engineers: *Nabih Youssef & Associates (structural); Arup (m/e/p, fire)*
Consultants: *Francis Krahe & Associates (lighting); Reginald D. Hough (concrete)*
General contractor: *Morley Builders*

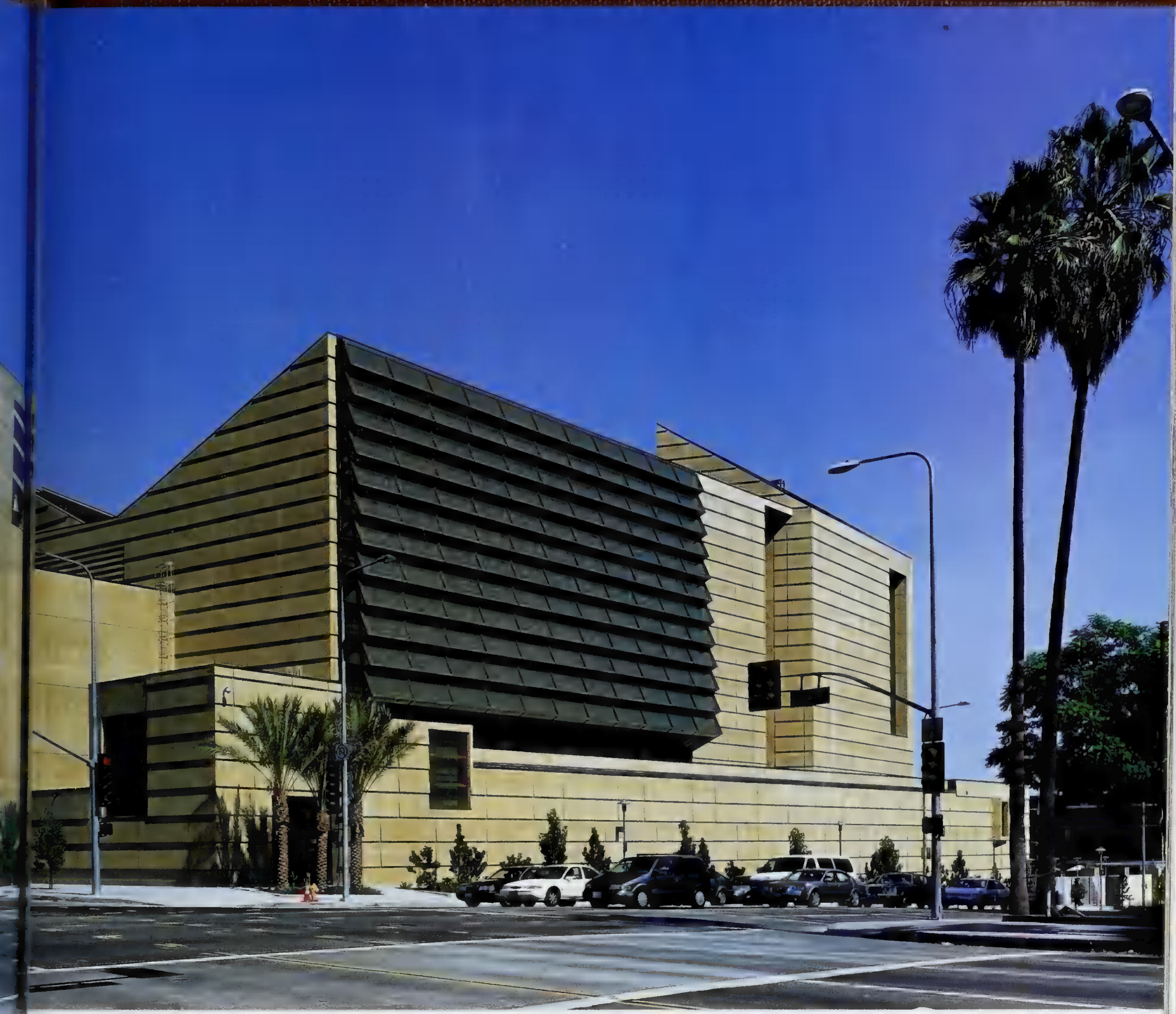




The cathedral's bronze entrance doors (above left), designed by sculptor Robert Graham, overlook the parking garage and stuccoed community center at the opposite end of the plaza (below). The campanile (above and opposite) occupies a small northwest courtyard. Serrated glazing covers the nave's alabaster panels (exterior view, opposite).



OPUS IN CONCRETE The desire of the Catholic church that the cathedral would stand for centuries, some say 500 years, led to fabricating the building of concrete. The adobe-tan pigmented concrete used for the church is a triumph in mixing, curing, and construction; not only is it beautifully crafted, there is no cracking and spawling (so far). To withstand cracking, a Danish white cement (Lehigh Aalborg) was mixed with pozzolan fly ash [RECORD, September 2001, page 175; *ENR*, September 10, 2001, page 42]. Then a number of methods were used to make sure the heat generated by the mixture of water and cement was controlled. Using Aalborg cement helped, since it warms up more slowly than others. To slow up the process further, Morley did the pours with cooled water at about 3 A.M., before the sun came up. In addition, the rebars were positioned at least 3 inches from the exterior surface to reduce rusting and, with that, further possibilities of cracking and spawling. Since the church sits close to the Elysian Park Fault, it is designed to withstand a quake of 8.5 on the Richter scale. Structural engineer Nabih Youssef devised a sophisticated seismic-base-isolation system below the church's main floor and its subterranean mausoleum: Load-bearing concrete walls are positioned on 149 isolators laminated of rubber and steel, 18 inches high. For lightly loaded areas, the interior concrete columns rest on 47 Teflon slider bearings only 3 inches high.

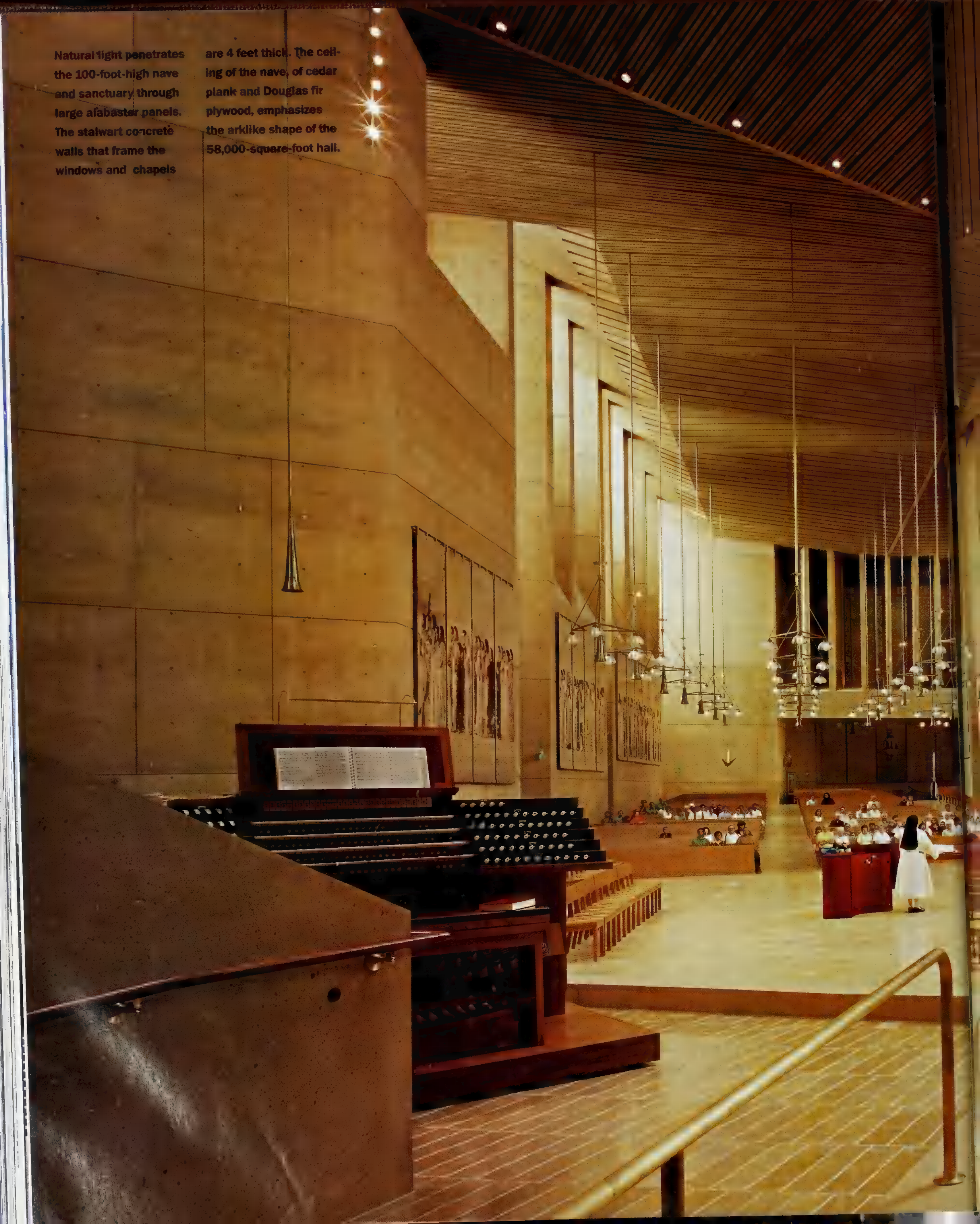


architectural object's formal structures are defined by its construction and use. As a type, it retains a continuity with forms of the past, which in turn provide "a frame within which change operates." External events, such as a new program or new construction techniques, however, can push the architect to create a type with new formal relations, something Moneo seemed to attempt with the $189 million Los Angeles cathedral.

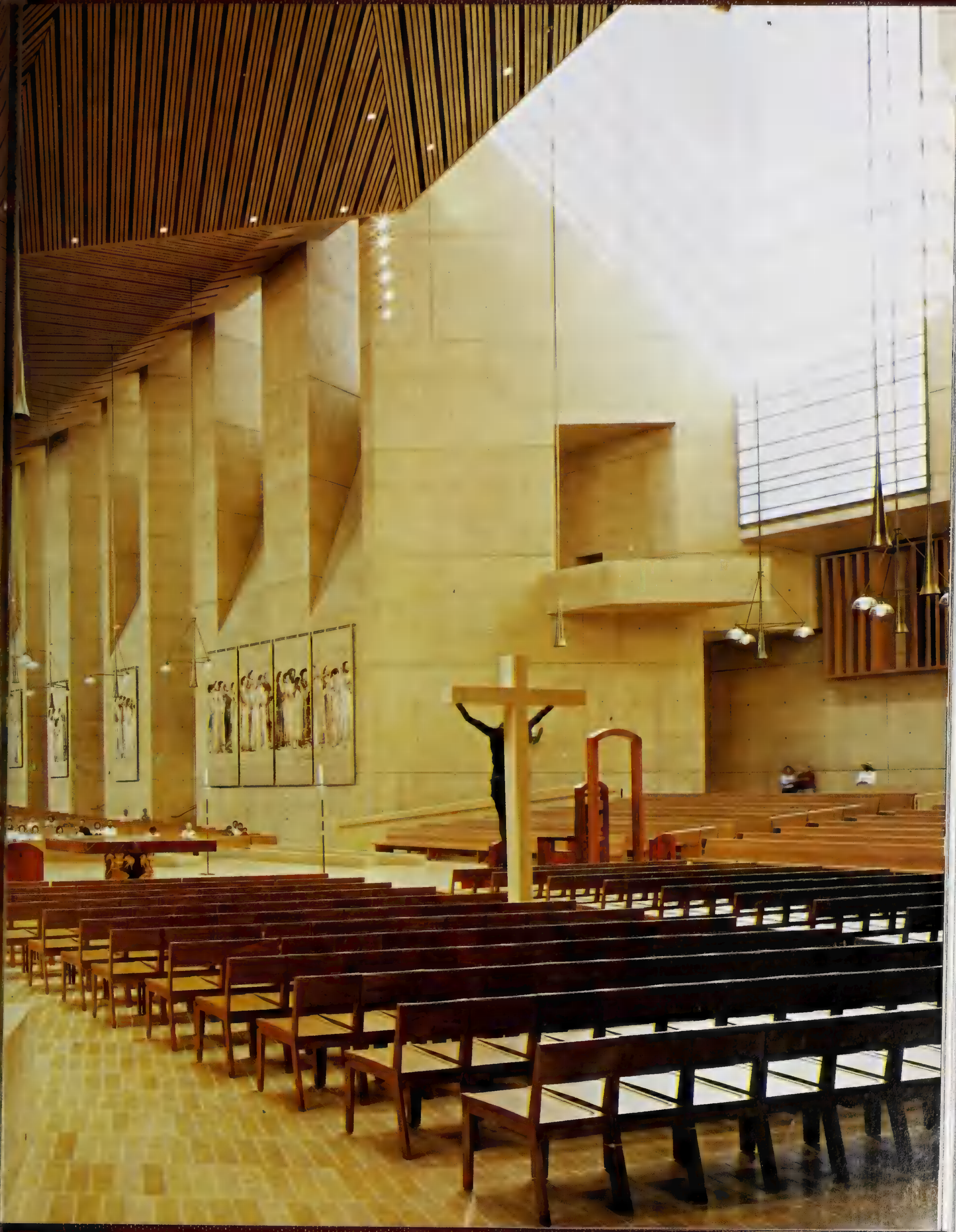
While the geometries of the planar, concrete shapes evoke the vernacular mien of Spanish Mission churches in the Southwest, the design is closer to the formalist Modernism of the 1960s nonliturgical architecture of Paul Rudolph, Kevin Roche, and I.M. Pei. Just emulating Mission-style architecture would have been cloyingly historicist. Yet Moneo's adherence to a late-Modernist blocky heftiness results in a noncommunicative angular assemblage of quiet, leaden (albeit well-crafted) forms. Moneo didn't have to be faithful to the Gothic, Renaissance, or Baroque church traditions to make a strong religious statement. But abstract geometries can radically symbolize the content of such a program, as Daniel Libeskind's Jewish Museum in Berlin demonstrates.

Although the exterior doesn't go far enough in creating a powerful expression of a transformed typology, Moneo's approach with regard to the plan does. He has provided a dramatically different kinesthetic experience to entering the church and arriving at the expansive nave and sanctuary that heightens the sense of being in a holy place. Moneo has brilliantly taken the traditional procession sequence and altered it so that one moves through a series of vertical and horizontal, contracting and expanding spaces, emphasized by the play of light and shadow.

Instead of having the visitors enter through the narthex, into the nave with the apse and transept of the cruciform at the far end, Moneo has worshipers enter the church from the same (eastern) side as the altar. As visitors pass through the blackish-bronze entrance doors on the southeast corner of the building, they step into a dark vestibule softly lit from the side by a large alabaster window. They then walk along the Spanish limestone floor of the ambulatory, which is edged by a narrow, linear sky-

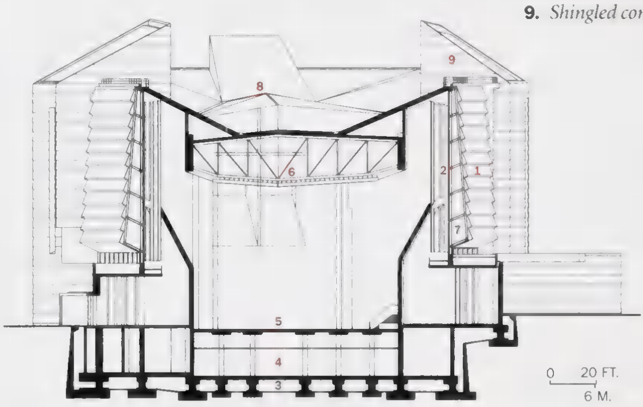


Natural light penetrates the 100-foot-high nave and sanctuary through large alabaster panels. The stalwart concrete walls that frame the windows and chapels are 4 feet thick. The ceiling of the nave, of cedar plank and Douglas fir plywood, emphasizes the arklike shape of the 58,000-square-foot hall.



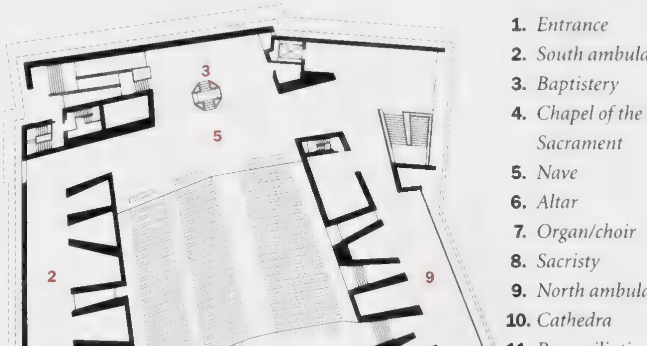
The roof structure is composed of nine steel trusses that span 90 to 115 feet in a north-south direction between concrete girders. A roof slab about a foot thick acts as a diaphragm and stabilizes the tall walls.

1. *Sawtooth curtain wall*
2. *Alabaster interior panels*
3. *Base isolation crawl space*
4. *Mausoleum*
5. *Nave*
6. *Attic*
7. *Service chase for curtain wall*
8. *Copper roof*
9. *Shingled concrete wall*



MAIN FLOOR PLAN

1. *Entrance*
2. *South ambulatory*
3. *Baptistery*
4. *Chapel of the Blessed Sacrament*
5. *Nave*
6. *Altar*
7. *Organ/choir*
8. *Sacristy*
9. *North ambulatory*
10. *Cathedra*
11. *Reconciliation chapel*



TRANSVERSE SECTION

light. The angle of the interior walls and the gentle upward climb heightens the sense of procession. The church's chapels, held within 4-foot-thick concrete walls, are arranged along the inner edge of this ambulatory; every now and then a space between them permits a glimpse into the nave and sanctuary.

In a deviation common to recent changes in church design, Moneo has located the tabernacle in its own Chapel of the Blessed Sacrament, rather than have it placed behind the altar. This striking chapel, a powerful and surprisingly vertical shaft, soars up to a height of about 85 feet, emphasized by a large alabaster-clad protrusion illuminated from the back by natural and fluorescent light sources.

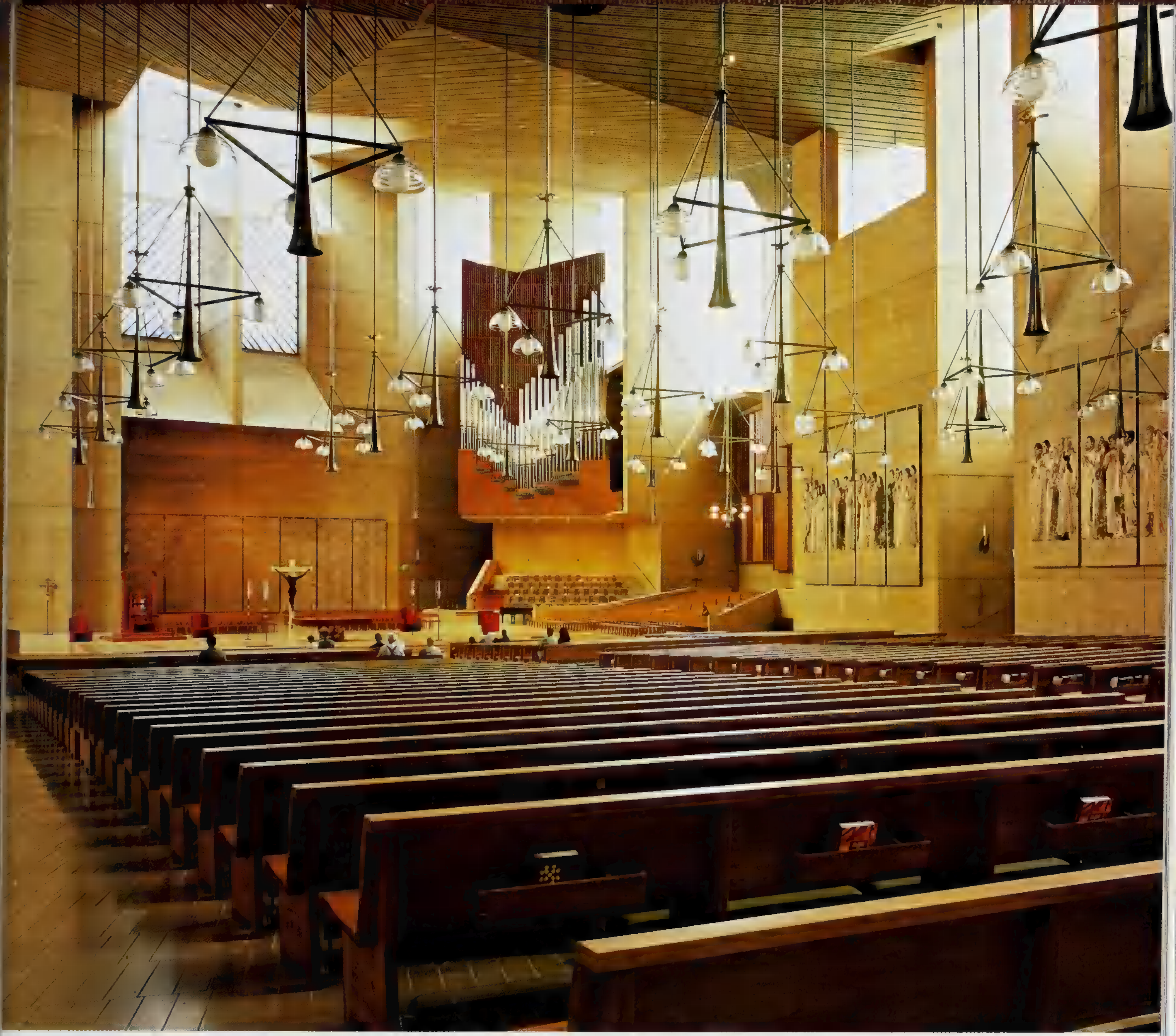
As visitors continue to the west end of the south ambulatory, a 17th-century Spanish Baroque retablo, or altarpiece, asymmetrically placed, terminates their path and guides them into the nave. In making this right turn, visitors all of a sudden find that space and light open up dramatically in a hall that seats 2,600, where large alabaster windows, instead of stained glass, suffuse the interior with a soft glow. In walking the 333.5-foot-long nave toward the altar and sanctuary, visitors are aware of a slight downward incline. A sense of vertical expansion is augmented by the 100-foot-high nave, and transepts that rise another 20 feet inside. In this major space, the poured-in-place concrete walls, the slightly angled ceiling of cedar plank and Douglas fir plywood, plus the cherry wood pews and the altar of red Turkish marble, create an understated setting. Dominating one's attention is the 6,019-pipe organ, also of cherry wood, that soars to an 85-foot height. From the altar area, visitors can gain access to the north ambulatory, which contains confessional booths. Farther along this walk, a striking 90-foot-long glass wall faces onto an open courtyard and affords glimpses of the 156-foot-high campanile.

While the kinesthetic qualities of Moneo's solution augment the church's architectonic power, the art selected by the church, and the surfeit of overly lighted suspended chandeliers, do much to fight it. Most of the art is on a level of figurative kitsch that suggests the church got nervous about the extent of Moneo's use of abstraction. In spite of all the press attention, Robert Graham, the sculptor for the bronze entrance doors, is no Ghiberti, as the studied muscularity of his WPA-proletarian-style *Our Lady of the Angels* and other religious images too well attest. But his doors are almost avant-garde compared to the poster realism of the tapestries by painter John Nava. Here photos of "normal" people were digitally rendered onto the 25 woven panels for a strikingly inauthentic effect. Even the muted palette doesn't tone down the cloying quality.

THE KINESTHETIC QUALITIES AUGMENT THE CHURCH'S ARCHITECTONIC POWER, BUT THE ART AND CHANDELIERS FIGHT IT.

The lighting, with fixtures that Moneo did design, is a series of inverted trumpets holding acoustic speakers and surrounded by translucent globes, with transparent half-globes over them. The design of the fixture itself is lyrical. But there are too many of them, and they hang so low in the space that, because of the incline of the floor, they block the view of the altar and organ from the rear of the nave. Also, they are too bright. The sophisticated computerized dimmer system was not in evidence during the 4-hour dedication services on a bright, sunny September day. Any sense of mystery owing to the beauty of shadows was sorely missing. It would also help if the translucent round globes were thicker and slightly yellow, so you couldn't see the light bulb inside.

As visitors leave the cathedral, they pass from a small courtyard between the north ambulatory and the campanile into a large, 2.2-acre open plaza, facing the community center and the residence house. Moneo's



The focus of the sanctuary (above) is the Moneo-designed cherry wood facade of the 6,019-pipe organ built by Dobson Pipe Organ Builders, with Manuel Rosales, the archdiocese consultant. The altar (near right) is Turkish marble, and the floors are limestone, as seen in the south ambulatory (far right).

outbuildings along the eastern edge of the plaza—which are, respectively, steel framed and wood framed, with a stucco coating—are unspectacular, but they do provide an inoffensive background for the church. And here on the open plaza it is easy to see that the entire site, some 5.5 acres, occupies a hill rimmed on the north by the Hollywood Freeway. To the south is Grand Avenue, where a couple of blocks away the arrestingly sculptural Disney Hall is now taking shape; farther south along Grand's "cultural corridor" is the Colburn School of Performing Arts by Hardy Holzman Pfeiffer's Norman Pfeiffer, and Arata Isozaki's Museum of Contemporary Art.

The site, at least symbolically, attests to the larger role of the church, with its diocese of more than 4 million people spread out through Los Angeles, Ventura, and Santa Barbara counties. Formerly, the cathedral was located in the Mission-style St. Vibiana, a masonry structure dating to 1876 in a skid-rowish section of downtown. When the 1994 Northridge earthquake damaged St. Vib's, as it is called, Cardinal Roger Mahony wanted to demolish it and build anew. Lawsuits by the Los Angeles Conservancy discouraged him from this course of action, and eventually St. Vib's was sold to the developer Thomas Gilmore, who is working with architect Brenda Levin to convert it into a performing arts center for Cal State L.A. and other groups. Meanwhile, Cardinal Mahony negotiated with the county to buy the current site for $10.85 million, and raised money for the new cathedral.

A selection committee, formed of Sylvia Lavin, chair of UCLA's department of architecture and urban design; Stephen Rountree, the Getty Trust executive vice president; Adele Chatfield-Taylor, president of the American Academy in Rome; and the late Ira Yellin, a developer, among others, drew up a list of architects to be interviewed. The short list came down to Moneo, Thom Mayne, and Frank Gehry.

Of those on the short list, Moneo, a Jesuit-trained Catholic, would arguably be quite familiar with the rituals and beliefs behind the church's architecture. Yet even he could not come up with an external architectural presence that communicates the sense of religion, power, and mystery. Scale is difficult with abstract forms: a small-scale chapel can be powerful, but a large, mammoth structure often looks just like that. The tan color of the concrete could mitigate the massiveness, but not as much as the drenched polychromy of Luis Barragan or Ricardo Legorreta.

In addition, the richly sensual association with past Catholic religious structures is hard to forget: in contrast, for instance, to the quiet formalism that Louis Kahn brought to the Unitarian Church in Rochester, New York (1961–69), which seems perfectly appropriate for its astringently simplified religious program. Even if the Catholic church wants to be simpler, its historically symbolic baggage demands more.

The church needn't go quite as far as critic Michael Rose urges, in his recent book *Ugly as Sin, Why They Changed Our Churches from Sacred Places to Meeting Spaces and How We Can Change Them Back Again*, to revert to highly traditional solutions somewhere to the right of Ralph Adams Cram. Replicating the old is not the answer. Indeed, Moneo's most powerful sacred space—the entrance procession—flies in the face of tradition. An emerging typology for the Catholic church needs to be forceful, dramatic, and innovative, while maintaining its continuity with the past. It must work within the frame, as Moneo once wrote, and yet break out of the frame. In the case of the Los Angeles cathedral, it does not quite happen. Instead, the sense of ambivalence hovers over its mute forms. ■

Sources

Concrete: *Morley Construction*

Concrete sealers: *Prosoco*

Metal and glass curtain wall and skylights: *Benson Industries*

Structural steel: *Plas-Tal (cathedral); Columbia Steel (conference center)*

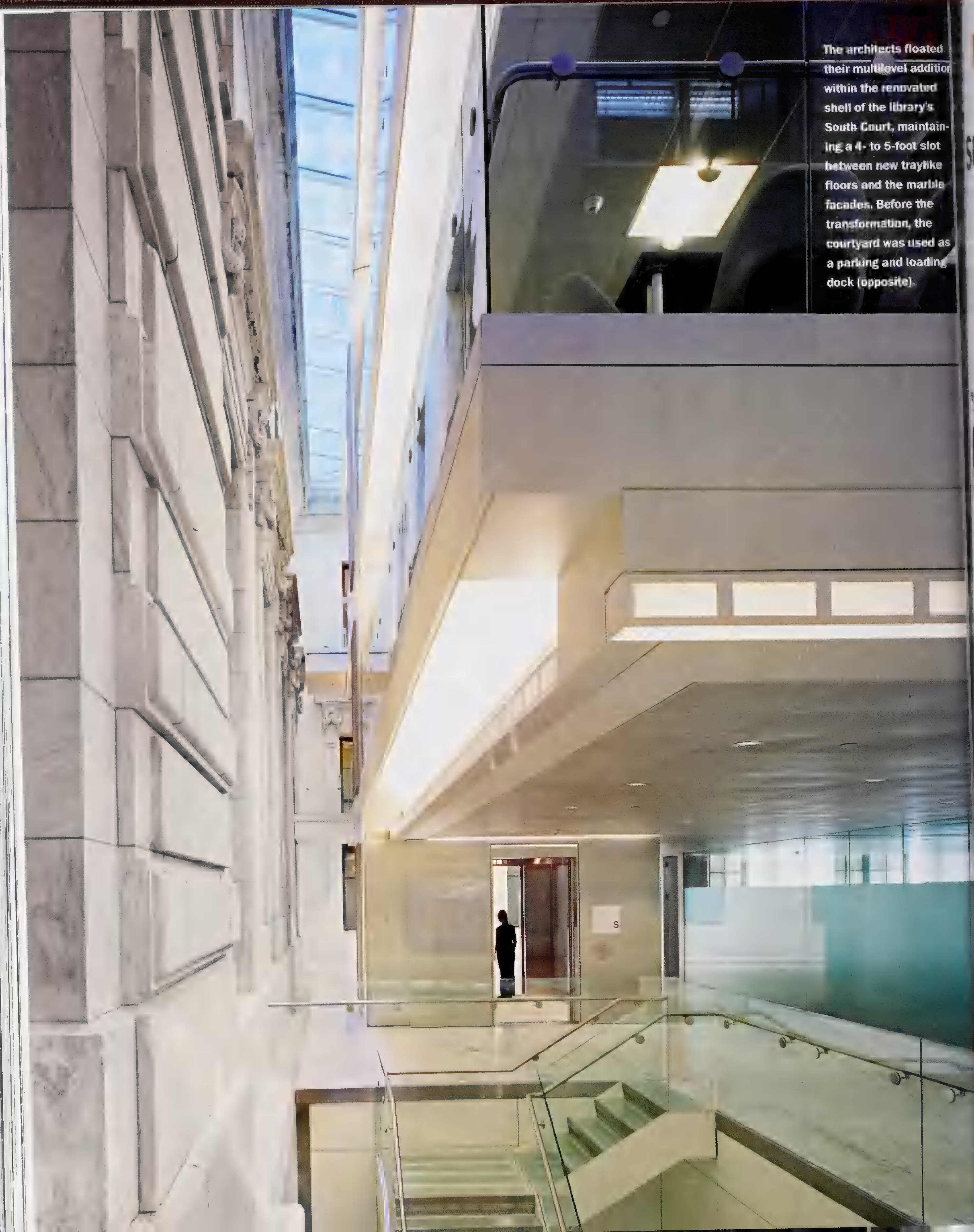
Expansion joints: *C/S Group*

Glass: *Viracon*

Steel windows, entrance doors: *Hopes System (cathedral)*

Wood ceiling: *Pacific Woods and Hutchison Group*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.



The architects floated their multilevel addition within the renovated shell of the library's South Court, maintaining a 4- to 5-foot slot between new traylike floors and the marble facades. Before the transformation, the courtyard was used as a parking and loading dock (opposite).

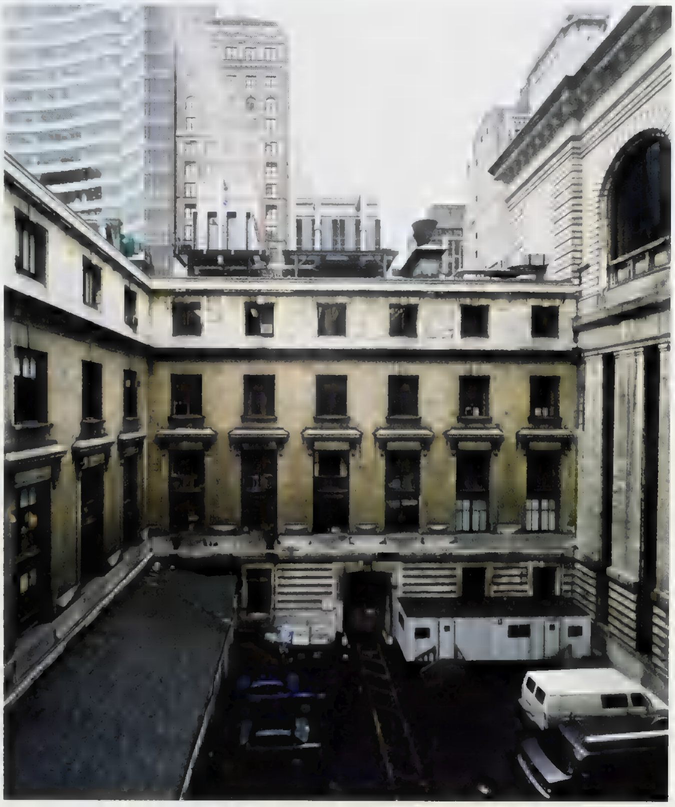
Davis Brody Bond gives new life to a Beaux-Arts grande dame, with the modern new **SOUTH COURT** of The New York Public Library

By Raul A. Barreneche

Manhattan architects Davis Brody Bond have enjoyed a long and fruitful relationship with a dowager, the main branch of The New York Public Library, the Beaux-Arts icon on Fifth Avenue and 42nd Street in Manhattan designed by Carrère and Hastings. Over the past 20 years, the firm has helped bring the landmark library up to date with a subtle combination of meticulous preservation and seamless technological upgrades. Davis Brody Bond's involvement began in 1982, when partner Lewis Davis headed the creation of a master plan to restore the library's musty public rooms to their original 1911 grandeur. Throughout the '80s, the firm renovated rooms bearing the names of New York's philanthropists past and present—the Astor Hall, McGraw Rotunda, and the Celeste Bartos Forum—as well as the Public Catalog Room. They also designed a new stack wing buried beneath adjoining Bryant Park before its restoration as New York's most urbane public space. In the 1990s, the architects renovated landmark interiors including the Main Reading Room and the Rare Book Room. When the library decided to relocate its science, business, and industry collections and staff from the main library in the early 1990s, Davis Brody Bond prepared a second master plan to rethink expansion plans in light of newly available square footage. That's when they began to look at the library's underutilized South Court in a whole new light.

The courtyard at the library's southern end was originally designed as a drop-off for horse-drawn carriages; since 1950, it had languished as a loading dock, parking lot, and general dumping ground, even though its articulate marble elevations suggested a far grander purpose. An ad hoc, trailerlike bungalow had also been erected within the courtyard to house overflow space for staff offices. The only unbuilt open space within the library, the South Court seemed the perfect site for a much-needed expansion, as a new structure could be built within the void without altering the building's profile. "The idea of adding onto the building had been kicking around for a long time, though nothing had been built above ground since 1911," says Paul LeClerc, the library's president and C.E.O. "There was a huge amount riding on the success of this intervention. My sense was that Lew Davis was so familiar with the vocabulary of Carrère and Hastings and the function of this building that we felt we could entrust it to him."

Davis and his colleagues developed a simple parti of a new freestanding box—or "trays of space," as Davis suggests—floating within the



South Court, never really touching the original building but continuing its floor levels at key junctures to keep circulation between the two structures fluid. The strategy made sense on many levels. But fitting 40,000 square feet of program—including a 178-seat auditorium, two classrooms, an orientation theater, collections and acquisitions staff offices, and a staff lounge—within the courtyard void proved challenging. The New York City Landmark Preservation Commission stipulated that the addition could not be seen from the street; the new insertion essentially had to remain invisible. Given the height restriction, there was simply no way to shoehorn in the necessary square footage. So the architects dug 40 feet beneath the existing ground level to scoop out enough space for the auditorium and a new mechanical basement. They stabilized the existing foundations and poured new concrete footings beneath, while the library remained opera-

Contributing editor Raul A. Barreneche is currently at work on a new book about tropical Modernism, to be published next fall by Rizzoli/Universe.

Project: *South Court of The New York Public Library, New York City*
Architect: *Davis Brody Bond—Lewis Davis, FAIA, partner in charge; Nathan Hoyt, AIA, associate partner; Ernesto Bachiller, AIA, project architect; Anne Asher, Ian Ferguson, Robert Halverson, Bennie Johnson, Pam McGirr, Anthony Sieveding, AIA, Don Nicoulin, Bruce Dole, project team*
Engineers: *Weidlinger Associates (structural); Atkinson Koven Feinberg (m/e/p); Langan Engineering and Environmental Services (geotechnical)*

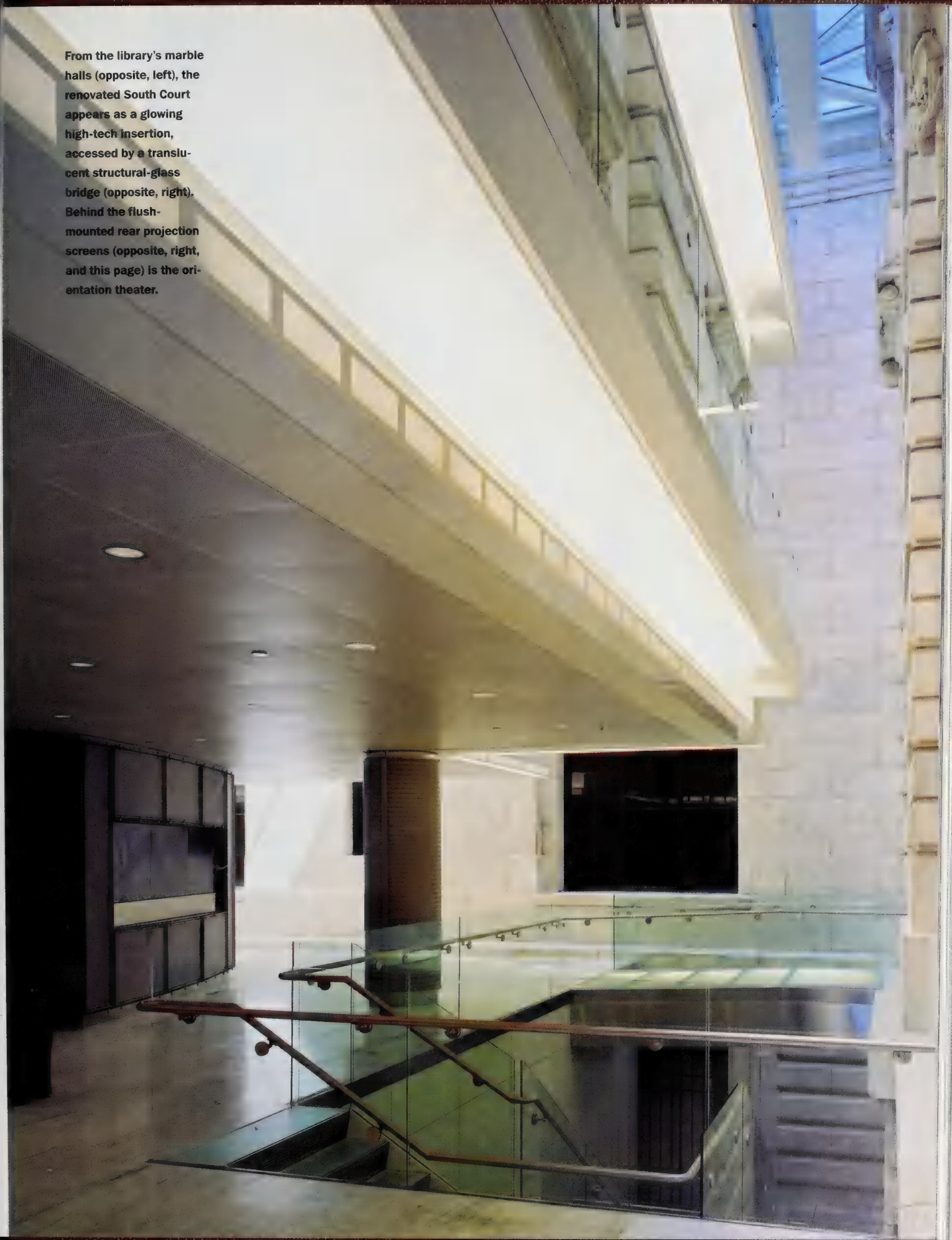
tional. Fortunately, none of the library's walls cracked or settled irregularly during the delicate operation. Once the ground was excavated and the new foundations poured, steel for the new structure had to be hoisted over the existing building and into the courtyard by tall cranes.

Visitors enter the new South Court, which became fully operational in September, without much fanfare, through glass doors inserted within an enlarged marble window frame along the library's monumental main hall. As they cross a glass bridge and enter the reclaimed courtyard, they leave behind the library's dark brooding halls for a luminous world of crisp, polished materials and daylight pouring in from ribbon skylights around the perimeter. The sparkling, freshly scrubbed walls of the old courtyard, hidden from view of the general public for nearly a century, become internal facades for the open "trays" that comprise the six-level insertion.

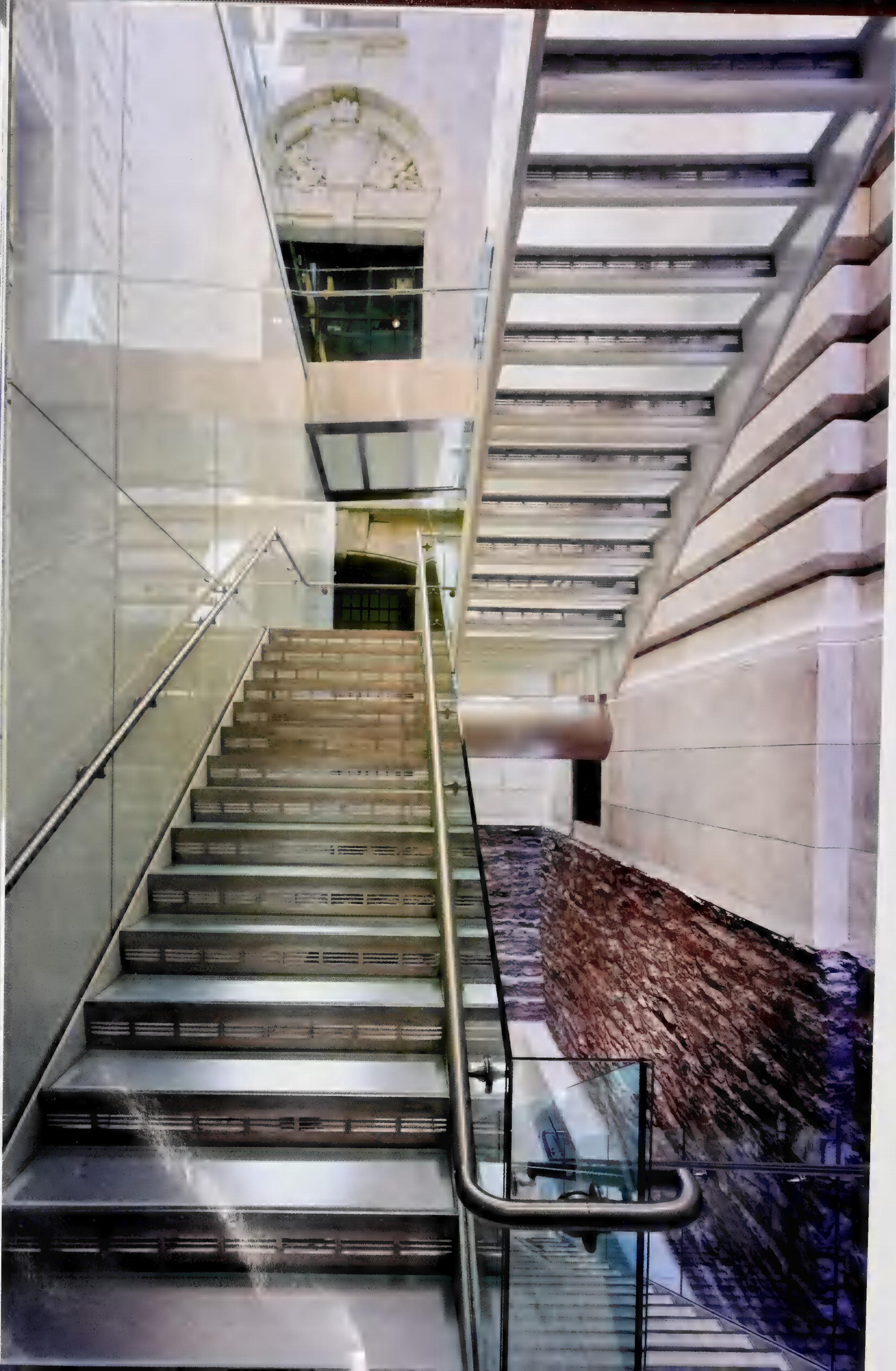
The public's first contact with the new addition is a small theater on the first floor showing a 12-minute film that introduces users to the library's resources. Adjoining the orientation theater are two state-of-the-art classrooms for instruction on using the library's electronic indexes and other research tools, with 15 interactive workstations each.

The only other public space in the addition—the auditorium—is located two levels down from the classrooms and theater via a translucent structural-glass staircase. (Between the first floor and the submerged auditorium is a vast new main loading dock at street level.) Descending the glowing staircase, visitors pass layers of building fabric revealed by the excavation: the courtyard's old *piano rustica*, the exposed rubble foundations, and the expanded concrete footings below, wrapped in gleaming white marble matching the courtyard facades. In fact, the walls, like the floors throughout the addition, are clad in marble drawn from the same quarry in Danby, Vermont, as the original library cladding. The auditorium itself is a large room made warm and more intimate by roped beech paneling and a beech-backed Finnish seating system. The architects installed golden-hued acoustical absorption panels behind walls of stainless-steel mesh to pick up the honey tones of the beech cladding and seat backs.

The library's acquisition and catalog staff now enjoy sleek new offices on the mezzanine, second, and third floors, and a comfortable lounge on the third floor. In the open workspaces, Davis Brody Bond's strategy of stacked trays within the courtyard is most clearly visible: The floor plates stop 4 to 5 feet from the restored marble facades, seemingly close enough to touch. Aluminum-leafed coves along the undersides of the exposed floors draw the eye outward to the articulated lintels and corbels of the courtyard walls and cast a flattering light on the freshly

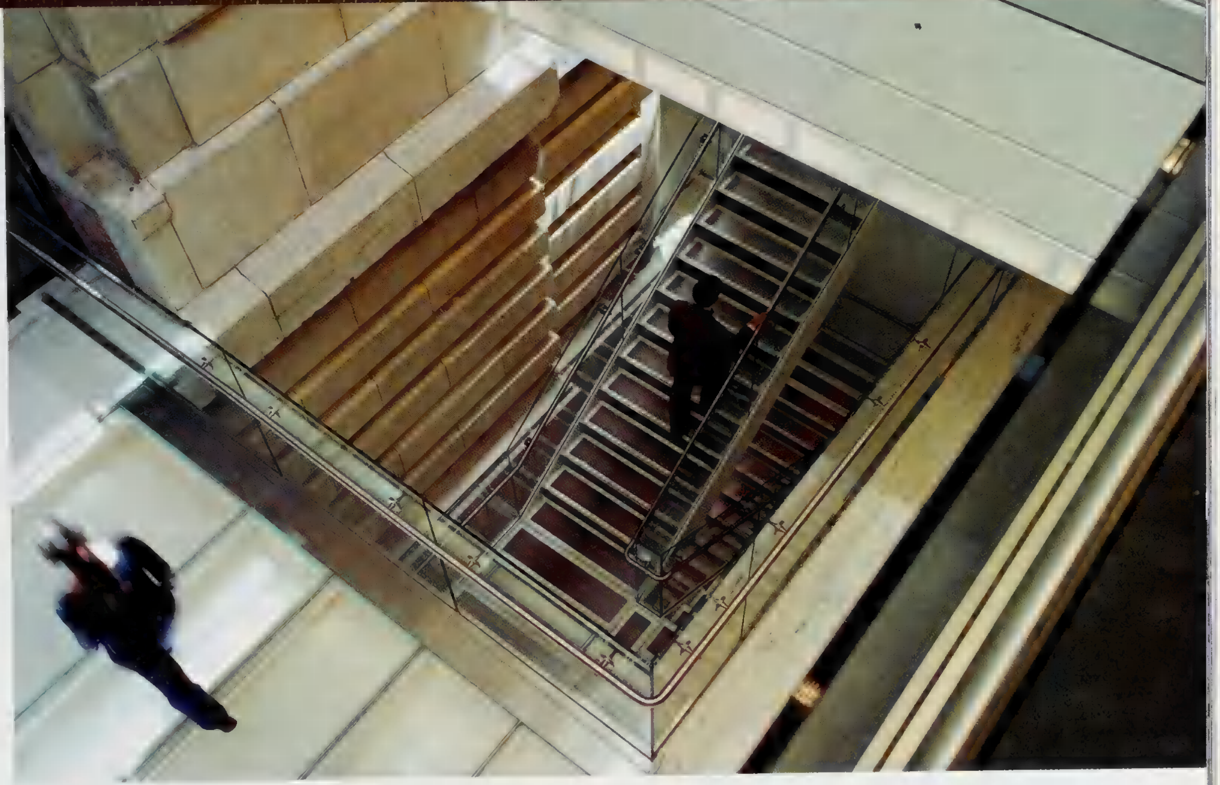


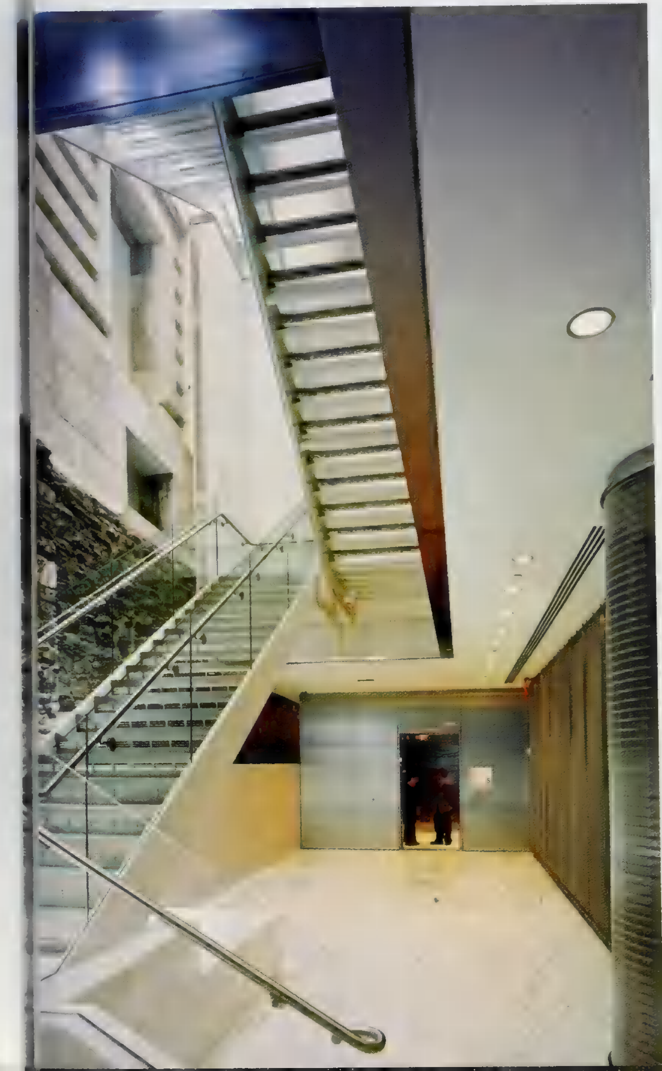
From the library's marble halls (opposite, left), the renovated South Court appears as a glowing high-tech insertion, accessed by a translucent structural-glass bridge (opposite, right). Behind the flush-mounted rear projection screens (opposite, right, and this page) is the orientation theater.

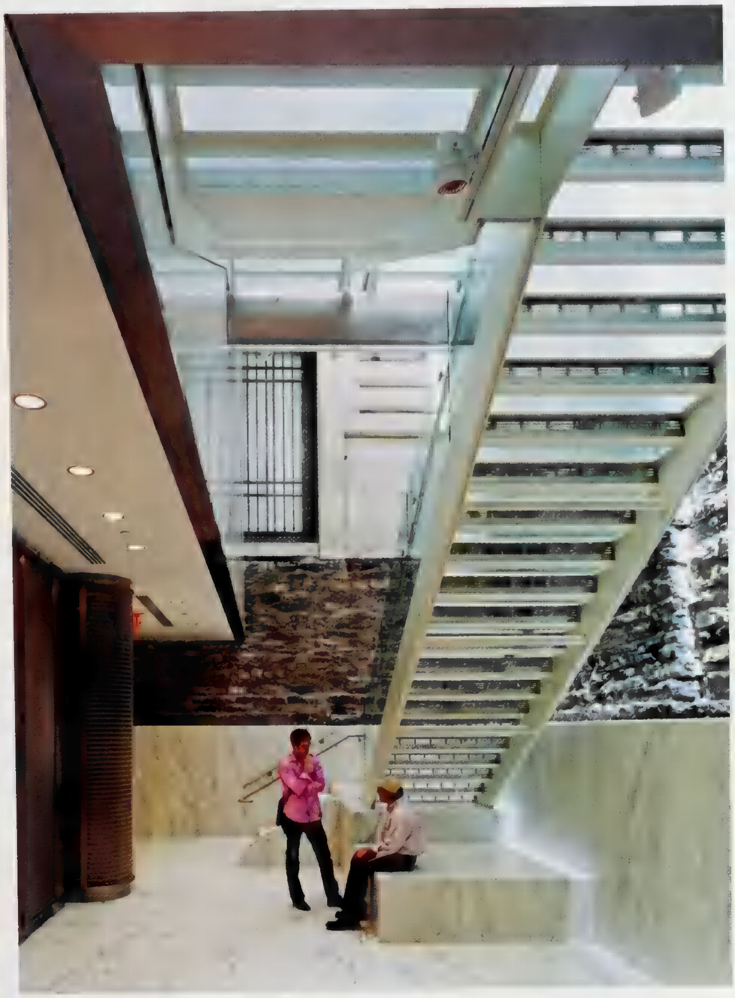


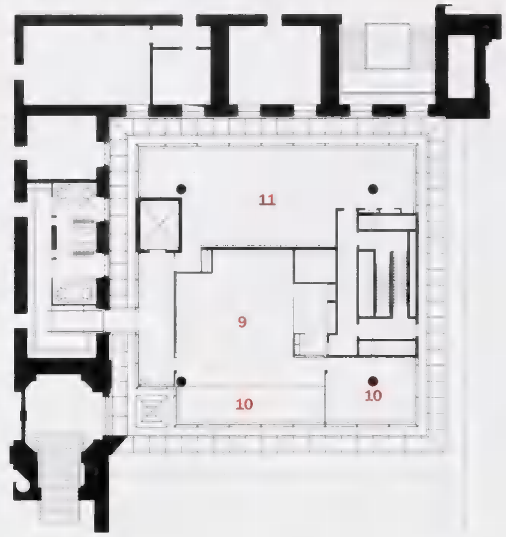
Directly beneath strip skylights, a structural-glass stair leads down two levels from the main floor to the auditorium (left), passing beneath the glass entry bridge (opposite, top).

The stair descends past exposed rubble footings and terminates in a marble basin defined by new foundations (bottom left and right).

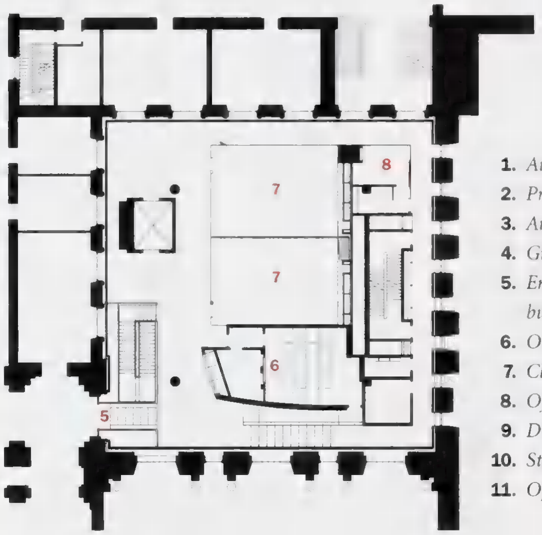






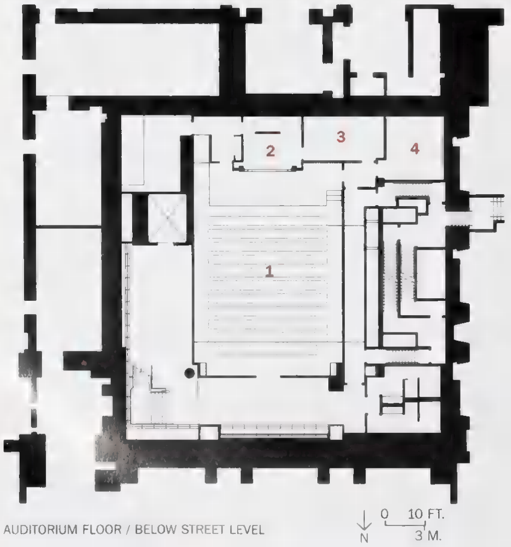


THIRD FLOOR

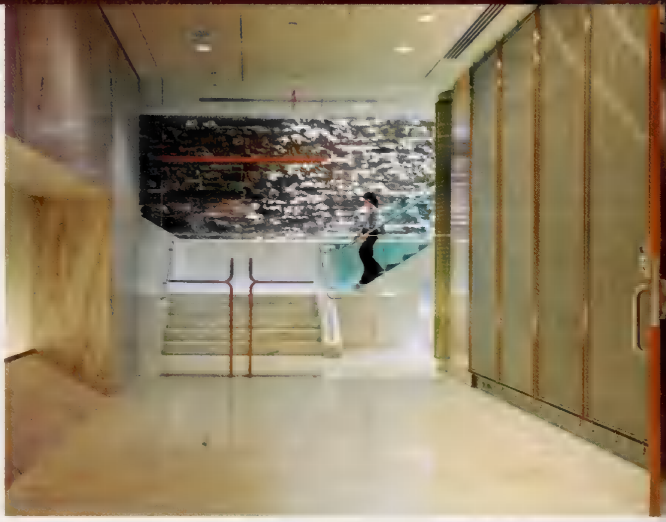


FIRST FLOOR

1. *Auditorium*
2. *Projection*
3. *Audio-visual*
4. *Greenroom*
5. *Entry from existing buildings*
6. *Orientation theater*
7. *Classroom*
8. *Office*
9. *Dining*
10. *Staff lounge*
11. *Open offices*



AUDITORIUM FLOOR / BELOW STREET LEVEL



scrubbed elevations. "It's amazing that Carrère and Hastings did these facades for a service yard instead of using brick," suggests associate partner and director of interiors Nathan Hoyt. "It shows their commitment to the design." Hoyt and his colleagues concealed core functions within the open offices behind bright red walls that strike a harmonious chord between the slick workstations and the graceful white marble facades.

The architects inserted strip skylights around the perimeter of the addition just above a continuous cornice that wraps the original courtyard above the second floor. Above this skylight datum, the glass-enclosed addition becomes a self-contained pavilion. Internal walls defining offices, a staff lounge, and a much-needed quiet zone on this level are veiled in beaded stainless-steel curtains that echo the metallic mesh panels found throughout the addition, including elevators.

Hoyt says that one of the driving forces behind the design was keeping the intervention as light as possible. The strategy has paid off handsomely: The new South Court is a graceful, seemingly effortless addition that stakes out a strong modern presence within the library's marble halls, frescoed walls, and carved plaster ceilings. It uses both light and a lightness of touch to convey a sense of transparency that more accurately reflects the essence of the contemporary library than grand, gilded interiors. It has just enough character not to fade into the background, but lets the surrounding historic architecture become an active part of its composition. In that sense, it's reminiscent of I.M. Pei's monumental, but discreet, additions to the Louvre, or Norman Foster's sleek but sensitive alteration of the British Museum's Great Court.

LeClerc says he thought it would be "disingenuous" to mimic the library's landmark structure. "I thought we needed something that was very 'today,' something that would stand alone proudly without bowing and scraping and paying homage to Carrère and Hastings," explains LeClerc. For Davis, however, the revamped South Court is both forward-minded and deeply reverential of the original architects, whom he admires as great innovators. As Davis explains, "We did everything to make Carrère and Hastings proud. In fact, we feel like we created a Carrère and Hastings building." ■

Sources

Concrete: *RCC Concrete*

Glass: *W & W Glass Systems (curtain wall); ASF Glass, Super Sky (skylights)*

Paneling: *Bauerschmidt & Sons*

Resilient flooring: *Armstrong*

Carpet: *Bentley; Stark*

Wood flooring: *I.J. Peiser*

Office furniture: *Knoll*

Lighting: *Zumbtobel; Linear; Edison Price; Elliptipar; LSI; Artemide; Lutron*

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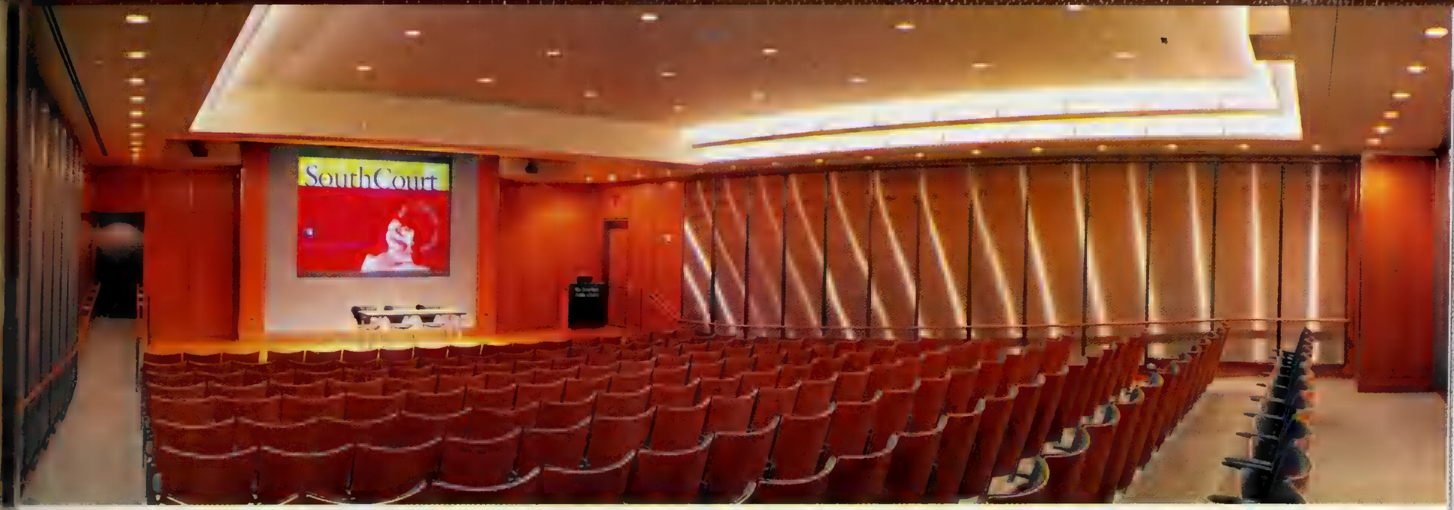
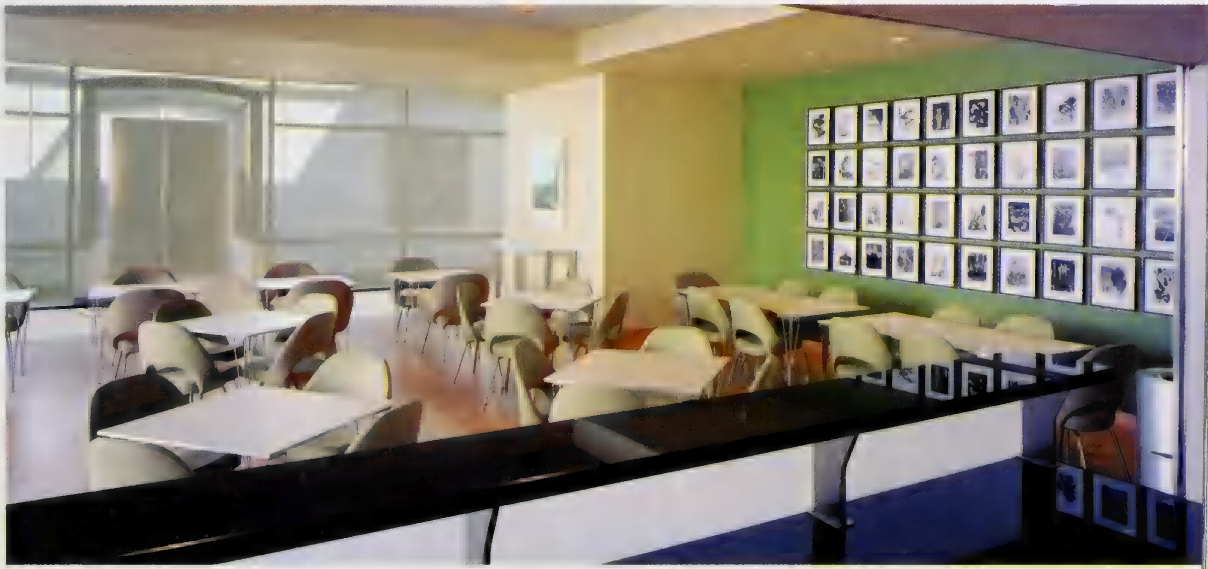
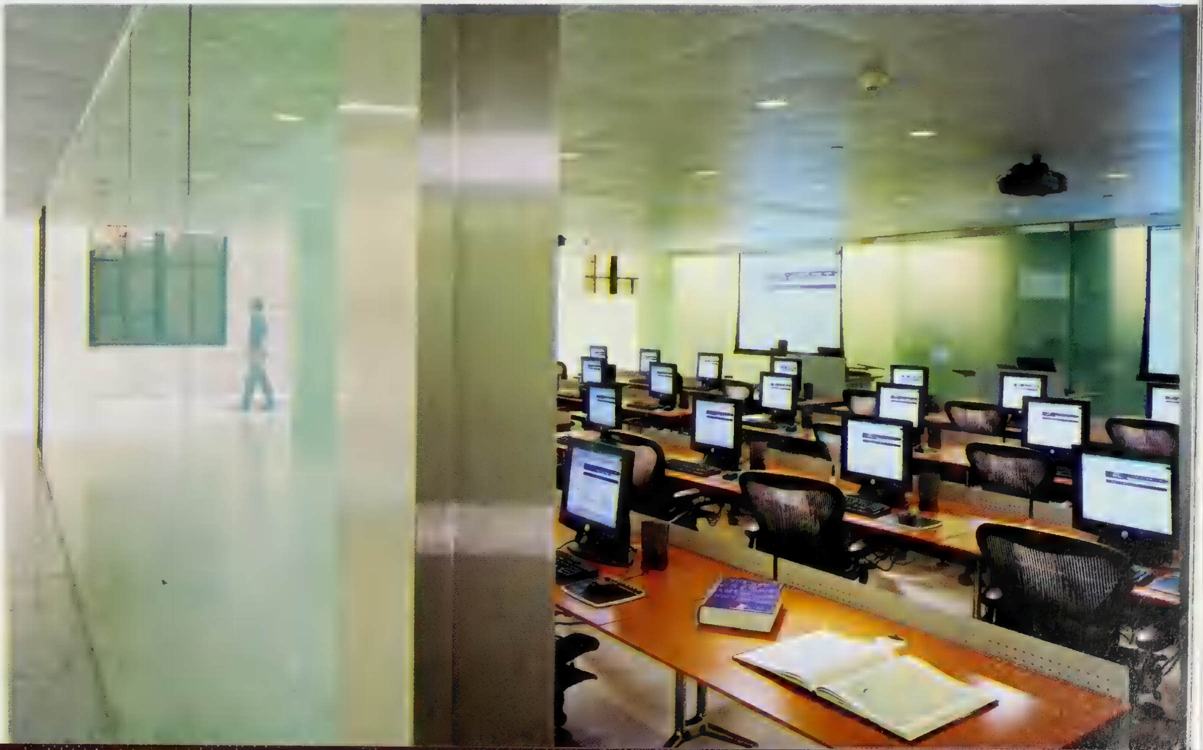
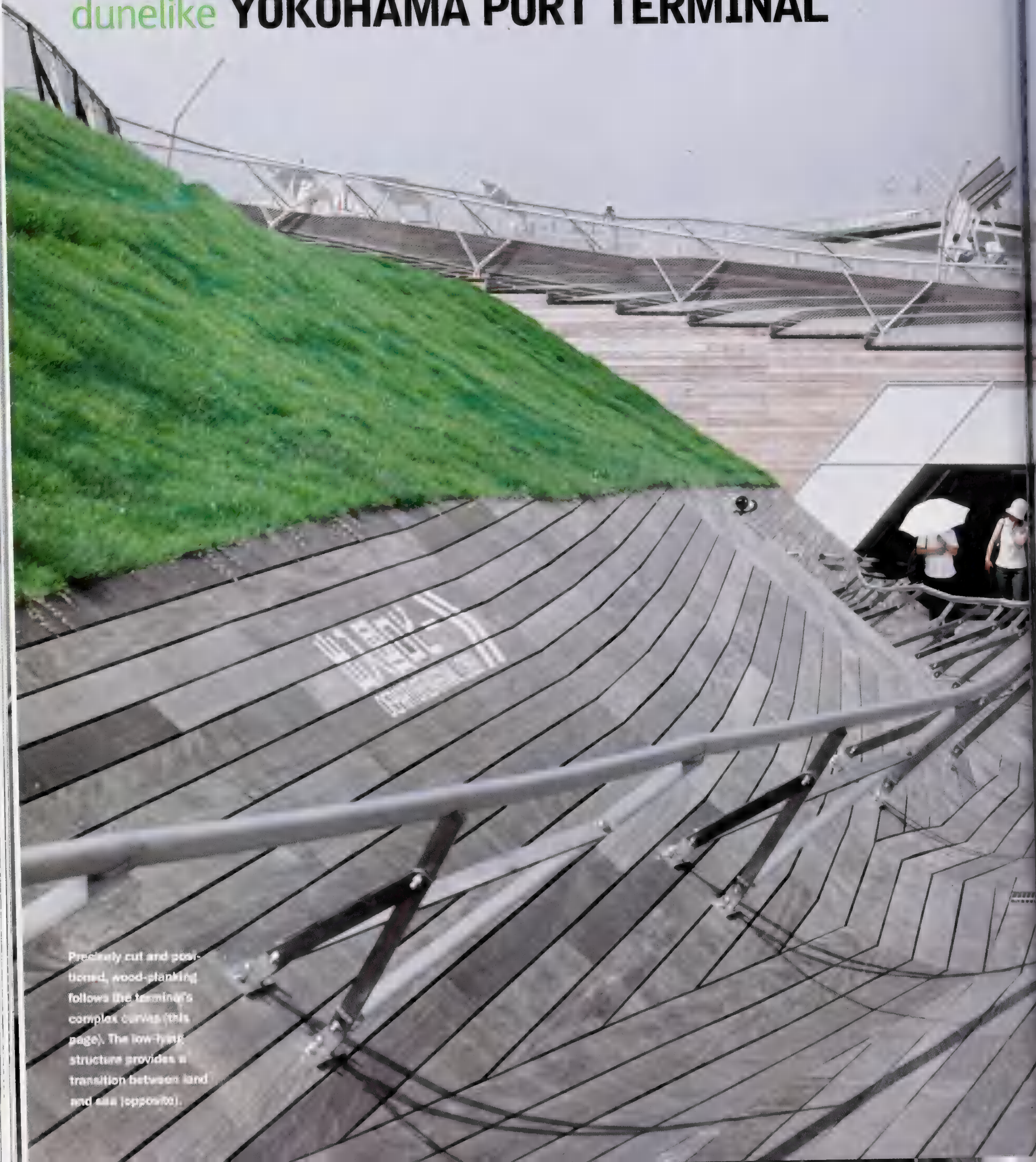


Woven stainless-steel mesh panels, a recurring motif throughout the South Court, define the back wall of the auditorium (above and opposite, top). Inside the auditorium, acoustical panels behind the mesh echo the warm color scheme of beech walls and seat backs. On the addition's third floor, a comfortable staff lounge offers veiled views of the original courtyard facade through glass walls (center right). Translucent glass encloses one of two interactive high-tech classrooms on the main level (below right).

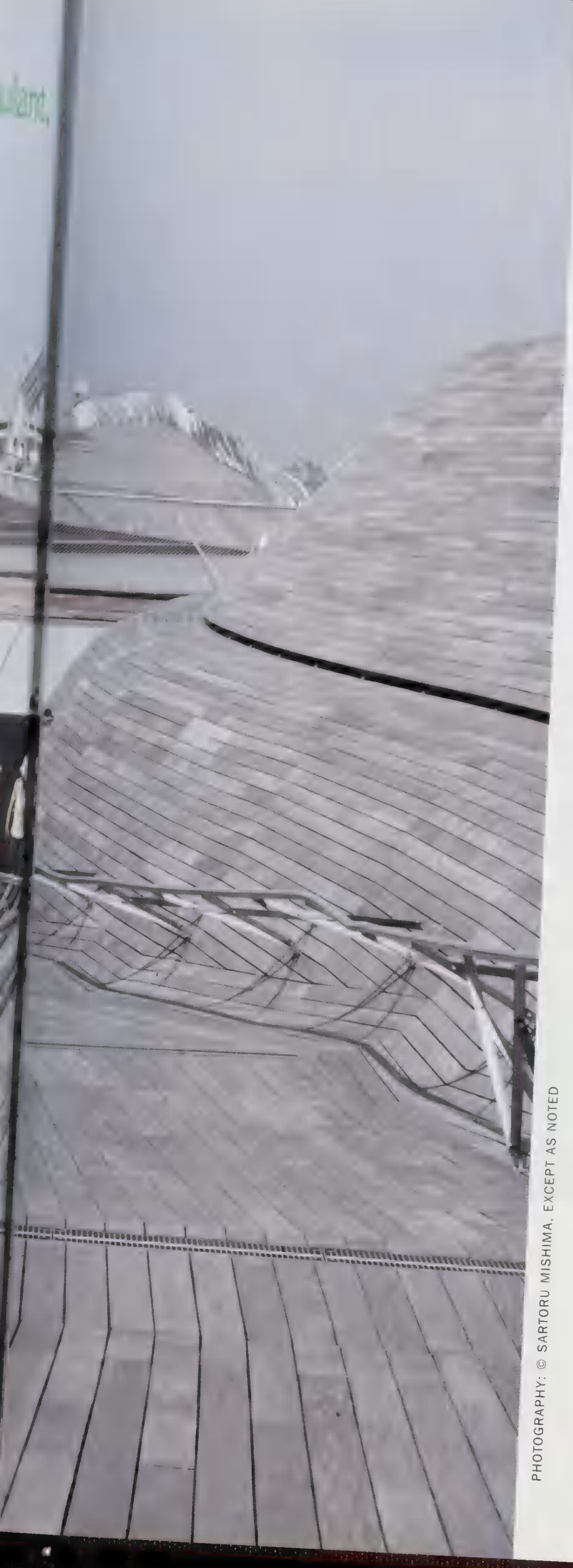




Foreign Office Architects blurs the line between landscape and building in its undulant, dunelike YOKOHAMA PORT TERMINAL



Precisely cut and positioned, wood-planking follows the terminal's complex curves (this page). The low-lying structure provides a transition between land and sea (opposite).

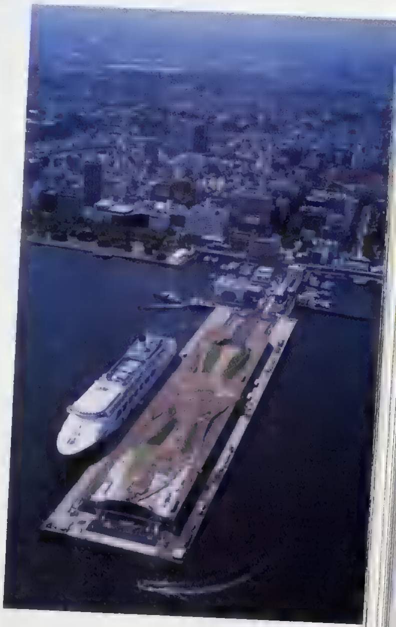


PHOTOGRAPHY: © SARTORU MISHIMA, EXCEPT AS NOTED

By Naomi Pollock

For an island nation, Japan is surprisingly good at pretending its waterfronts do not exist. Throughout the country, shorelines and harbors tend to be undeveloped, at best, or marred by industrial complexes or ill-conceived master plans, at worst. But the completion of Yokohama International Port Terminal, designed by London-based Foreign Office Architects (FOA), is bound to raise those standards. Casting conventional typologies overboard, FOA created a building that blurs distinctions between architecture and landscape. Here, beneath—and above—a long, wavy, "topographical" roof, a transportation node and civic gathering space meld into one.

This highly ambitious project is one of the first large-scale realizations of a new generation of cyber-influenced architecture, distinguished by its fluidly irregular, curvilinear geometry. It is the final result of an open competition held in 1995 by the Yokohama Port and Harbor Bureau. Hoping to create a significant work, the jury—composed of city officials and the renowned architects Arata Isozaki, Toyo Ito, Yoshinobu Ashihara, and Rem Koolhaas—selected FOA's scheme from a pool of 660 submissions from 41 countries.



By pouring money into public works projects, Japanese government agencies were trying to jumpstart the economy. But the winning team was apparently not quite what the competition organizers had envisioned. FOA partners Farshid Moussavi and Alejandro Zaera-Polo were only 29 and 31 years old, respectively, and had completed just a handful of projects, primarily interiors and renovations. The firm had yet to build a public facility on its own turf, let alone in Japan, making Yokohama city officials nervous, at first, about hiring this young practice from abroad. Complicating matters, a Japanese recession, coupled with routine shifts in the governing bureaucracy, soon put the project on hold and threatened to capsize it. But in 1999, when Yokohama geared up to host 2002 World Cup events, work on the terminal finally began in earnest.

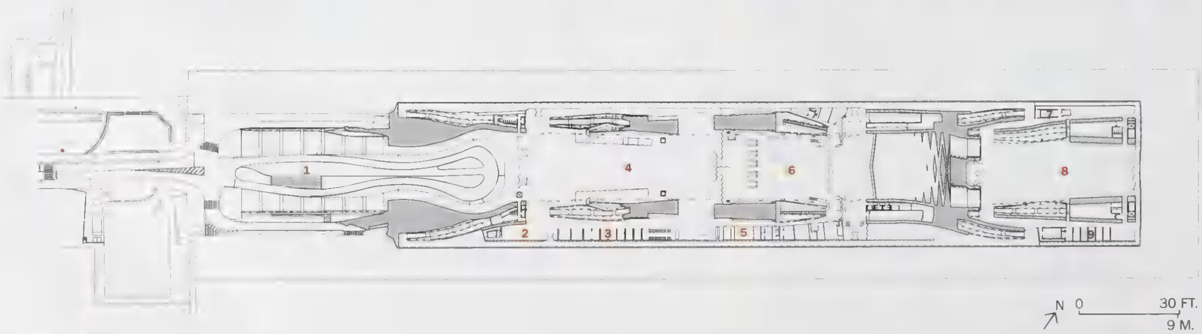
Although FOA's design was a gutsy choice, the selection of a foreign firm was fitting since Yokohama had been one of the first ports in Japan to open to trade with the West. Still in use today, the Osanbashi Pier, originally erected during the Meiji period in the late 19th century, was expanded with landfill to create a site for the International Port Terminal.

Jutting 1,411 feet into Yokohama Bay, the new construction extends almost seamlessly from the existing pier. The building rises from

Naomi Pollock is RECORD*'s Tokyo-based correspondent.*

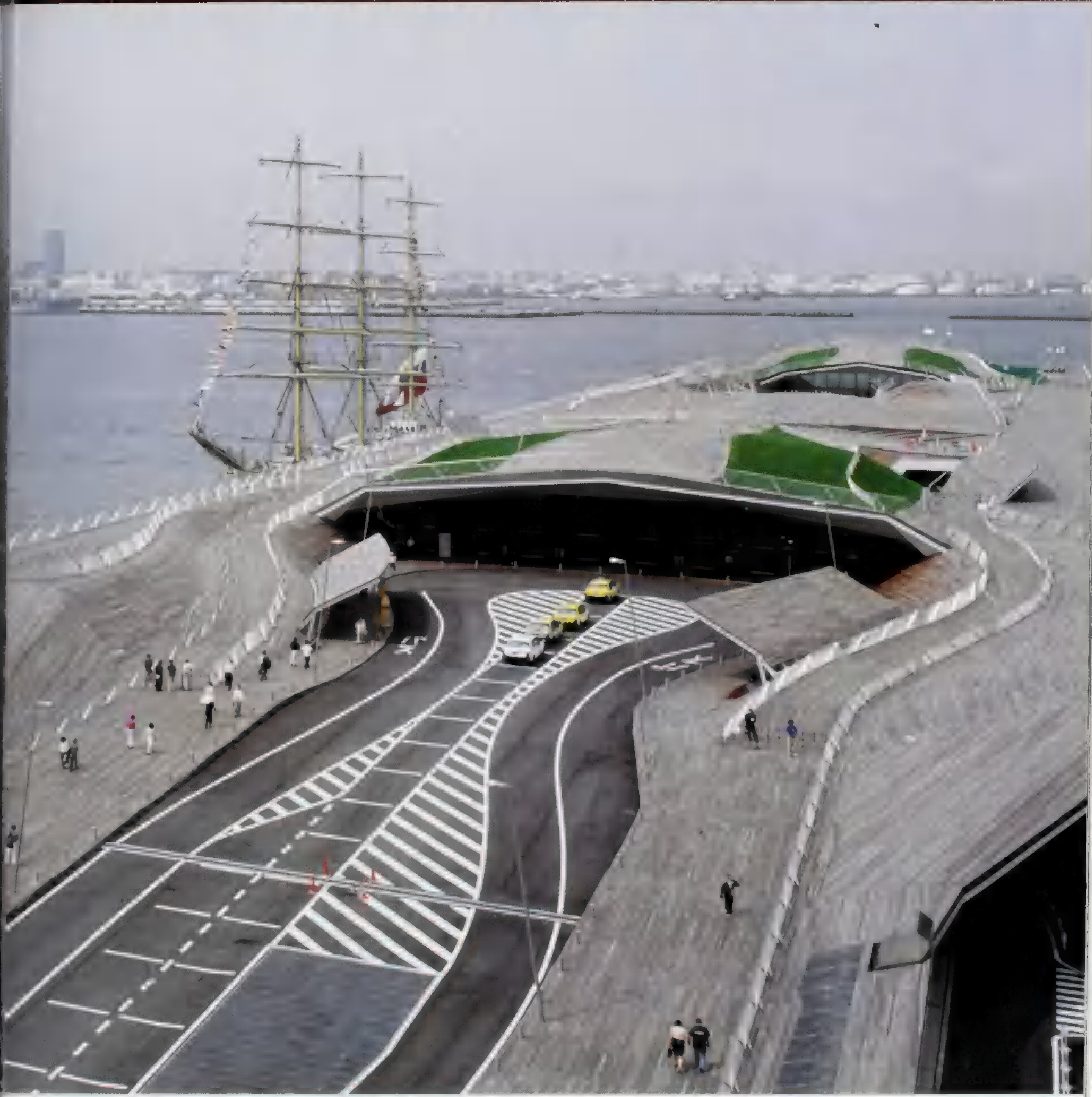
Project: *Yokohama International Port Terminal, Yokohama, Japan*
Architect: *Foreign Office Architects—Farshid Moussavi, Alejandro Zaera-Polo*
Associate architect: *GKK*
Engineers: *Structure Design Group (structural); PT Morimura (services)*
Consultants: *Kado Lighting Design Laboratory; Negata Acoustics; Akeno Fire Research Institute; Urban Traffic Engineering*
General contractors: *Shimizu; Kajima; Toda*

Flanking the roadway, two wooden boardwalks ramp up gradually from the ground to become the terminal's rooftop promenade, offering 360-degree views of the city and sea.

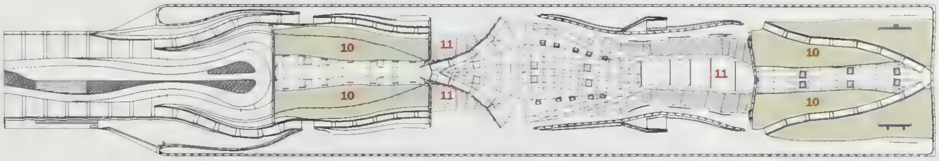


TERMINAL LEVEL

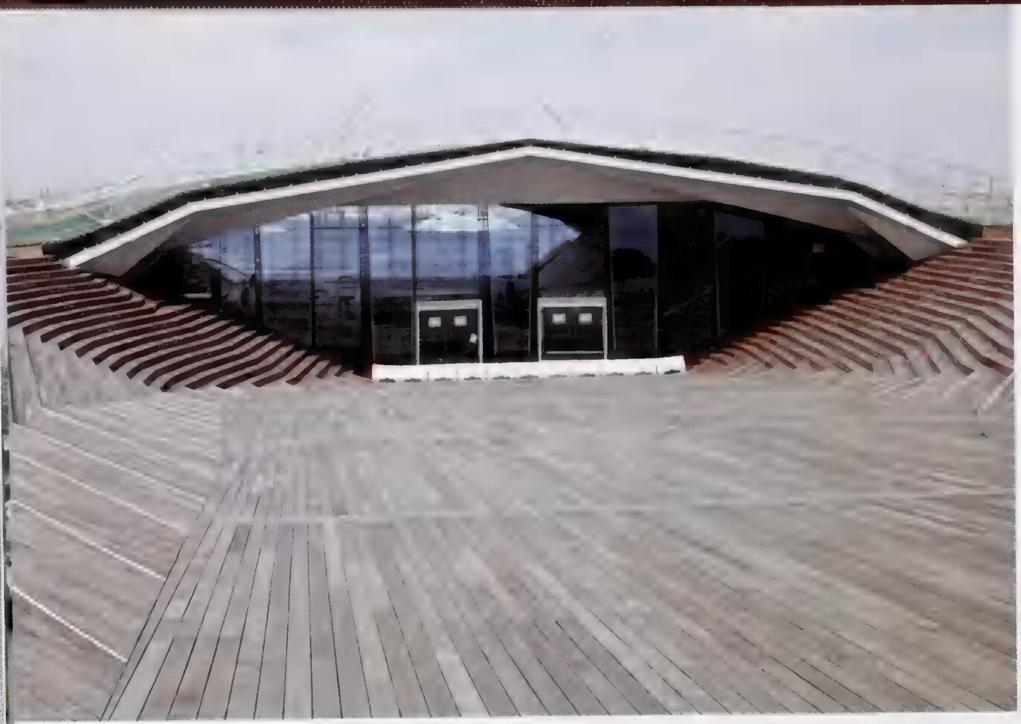
1. *Traffic plaza*
2. *Café*
3. *Shops*
4. *Departures/arrival*
5. *Offices*
6. *Customs/immigrat quarantine*



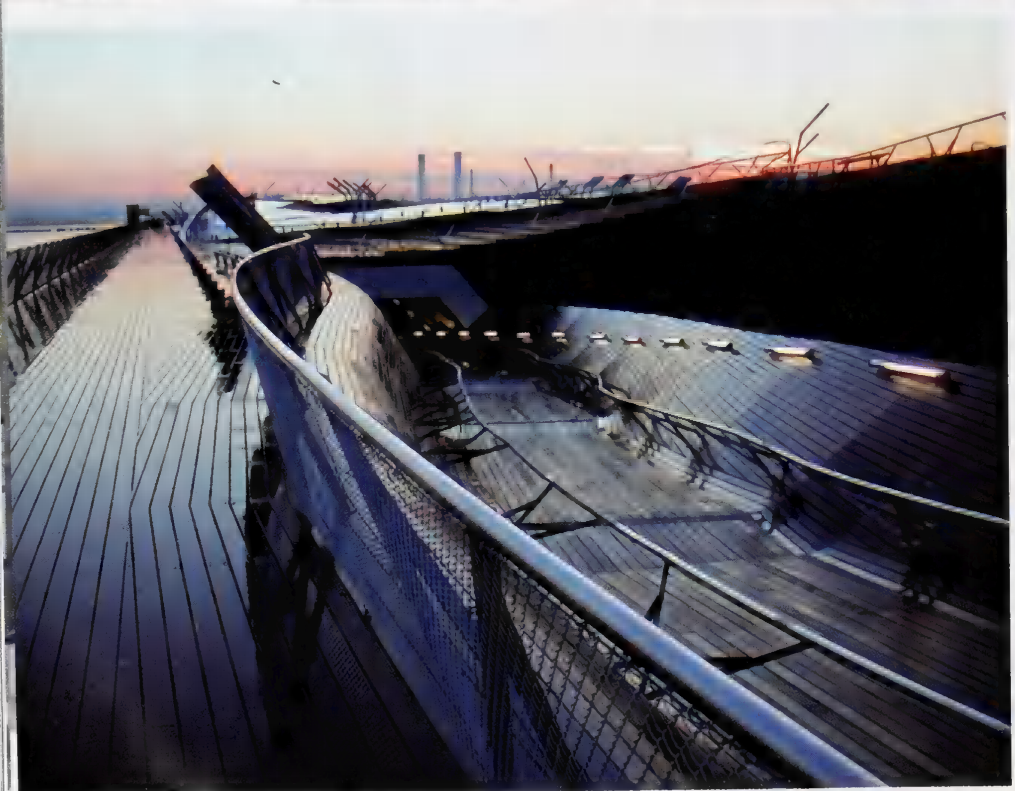
Restaurant
Multipurpose
Dressing room
Green space
Amphitheater



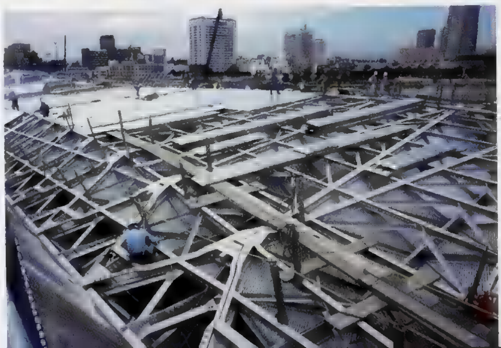
UPPER LEVEL

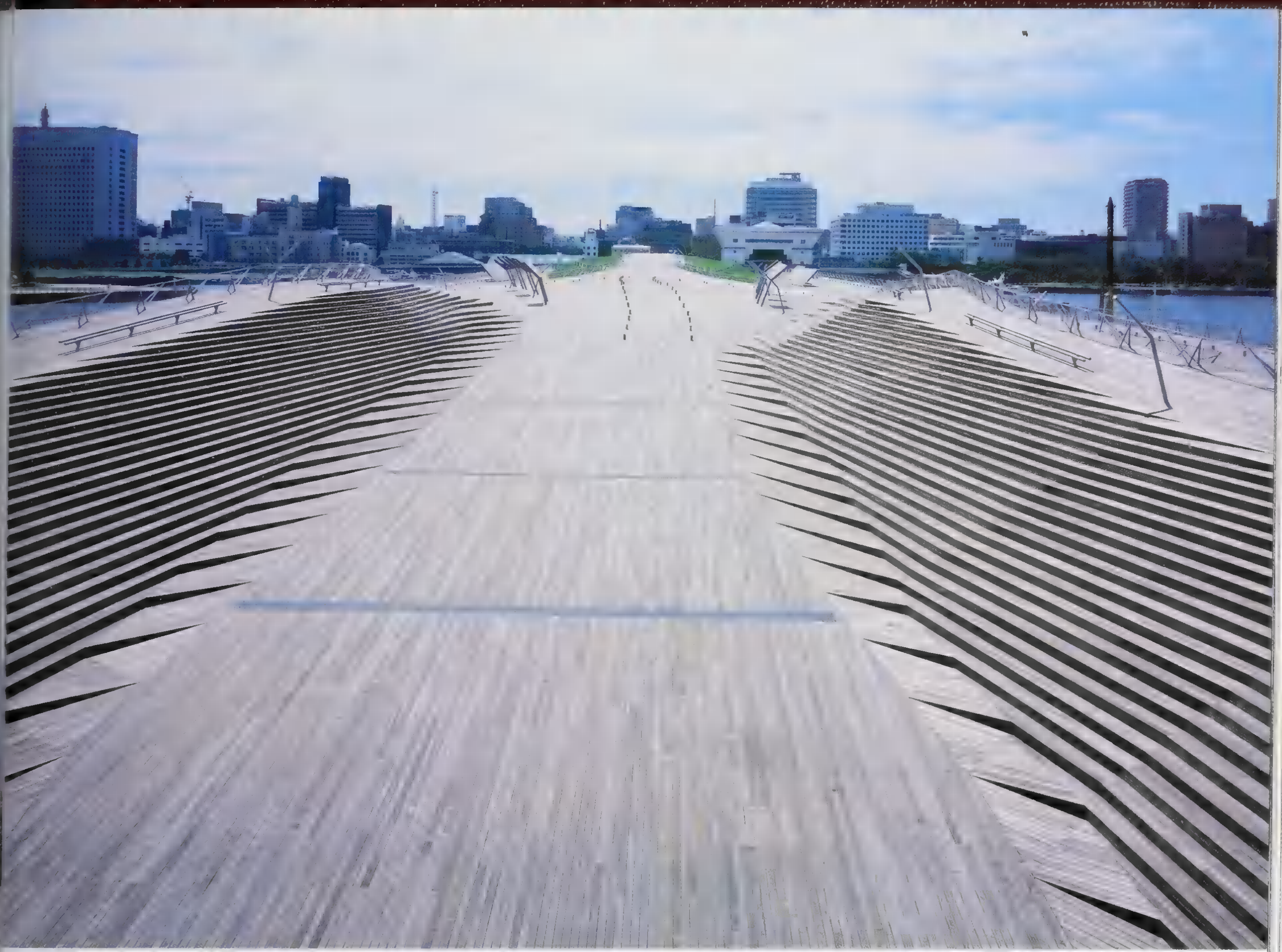


Some of the roof topography steps down to provide raked seating for spontaneous performances, public events, or casual people-watching (left and opposite). In wet weather, the decking's many facets become reflective (center left).



Pedestrians, ships, bicyclists, and automobiles all converge at the port terminal (above). A complex steel substructure (bottom left and right) supports the seemingly gentle flow of the building's sculptural, wood-clad roofscape.





two wooden boardwalks that ascend gradually from the ground to become the rooftop, where a promenade offers 360-degree views of the city and sea. At grade, the terminal's keyhole-shaped traffic plaza culminates at the glazed main entrance. This entry flows into a waiting area for local and international travelers, and then into the customs, immigration, and quarantine plaza. Serving as a passenger-processing area for international cruise ships 25 times a year, the plaza is available for public events on other days. At the terminal's tip, a multipurpose hall with floor-to-ceiling glazing overlooks the water. Flanking these spaces are ramps leading up to the roof or down to service areas and parking for 400 cars. Ship boarding occurs along exterior decks at the building's perimeter.

It was challenging, however, to reconcile the spatial requirements for ship boarding with the site conditions. Though basically symmetrical around its long axis, the terminal is not centered on its newly constructed pier, a 162-foot-wide landfill strip, surrounded by an apron with ship moorings. Because the architects had to retain an existing extension of the Osanbashi Pier, the apron is 16 feet wider on one side than the other. Yet, to accommodate a uniform gangplank size, all decks needed to be equidistant from boats anchored at the apron edges. FOA resolved the discrepancy by cantilevering the terminal level 10 to 16 feet on one side and up to 56 feet on the other. Providing visual balance, they placed boxy offices and shops beneath the inboard ends of the longer cantilevers, while manipulating structural elements to equalize lopsided loading conditions.

The terminal's column-free structural system consists of essentially two parts: folded steel plates for transverse loads and bridgelike steel girders for longitudinal loads and support of the cantilevers. The transverse component was initially designed as two flat plates sandwiching steel webbing, but as the project developed, the bottom plate was eliminated and the webbing replaced with triangulated folds of sheet steel. The entire transverse system evolved from a composite resembling corrugated cardboard (insofar as it held a wavy material between two thin, flat layers) to an assemblage more akin to origami. "The girders are basically large-scale folds," explains FOA partner Alejandro Zaera-Polo. Trough-shaped and hollow in cross section, these members house a network of ramps. But achieving the necessary combination of structure and function was no easy feat: As load-bearing elements, the girders had to be anchored to piles in the landfill, while the ramps within the girders had to mediate between two levels of spatial and programmatic needs. Still another parameter was the required slope for wheelchair access, which set the ramp lengths. The solution, satisfying all these criteria, resulted in a system of wood-lined ramps, each with its own range of twists and curves and girders, all varying in section constantly along the building's length.

Given this geometric complexity, the architects designed the building with computer-generated local vector systems similar to those used routinely by naval architects. But the move from design to construction introduced other complications. To begin with, building technology typically relies on a more straightforward Cartesian system to position objects in space. And the city complicated the coordination of the construction process when it divided the 97,846-square-foot building longitudinally into thirds, assigning each chunk to a different contractor. Every builder had to piece together its own section and join it with the others, as if assembling segments of a roller coaster. Fortunately, the site's waterfront location eased the task, allowing components to arrive by boat from 15 different steel fabricators and ship builders in Japan and Korea. "What is remarkable is the amount of technology used in this building," says Zaera-Polo. "I don't think ship welding and assembly techniques have ever been used to this extent in architecture before."

Spreading the work among many manufacturers and contractors may have benefited the economy and kept the project on a tight two-year construction schedule, but it also placed unusual demands on the architect's ability to maintain consistency. Clean details and a limited palette—glass, steel, and planks of Brazilian Ipe, or ironwood—helped, yielding uniform interior and exterior surface treatment and reinforcing spatial flow. Although the undulant, wood-clad building may seem laden with references to dunescapes and seaside boardwalks, the formal qualities are rooted in the terminal's program and functions, as well as the architects' desire for visual continuity. To achieve such a strong sense of unity, FOA had to keep close tabs on the project. So the London-based firm set up a Tokyo office and followed the work throughout construction.

Working overseas had its trying moments for FOA, but the project has been well received in both Japan and England. Though relatively few Europeans have had a chance to visit Yokohama, the building is making waves around the globe. In this year's Venice Biennale, it constituted Britain's entire entry. With the Yokohama terminal, the still-young firm of FOA has put itself on the map—and navigated international waters with remarkable skill. ■

Sources

Steel: *Kawasaki Heavy Industries; NKK*

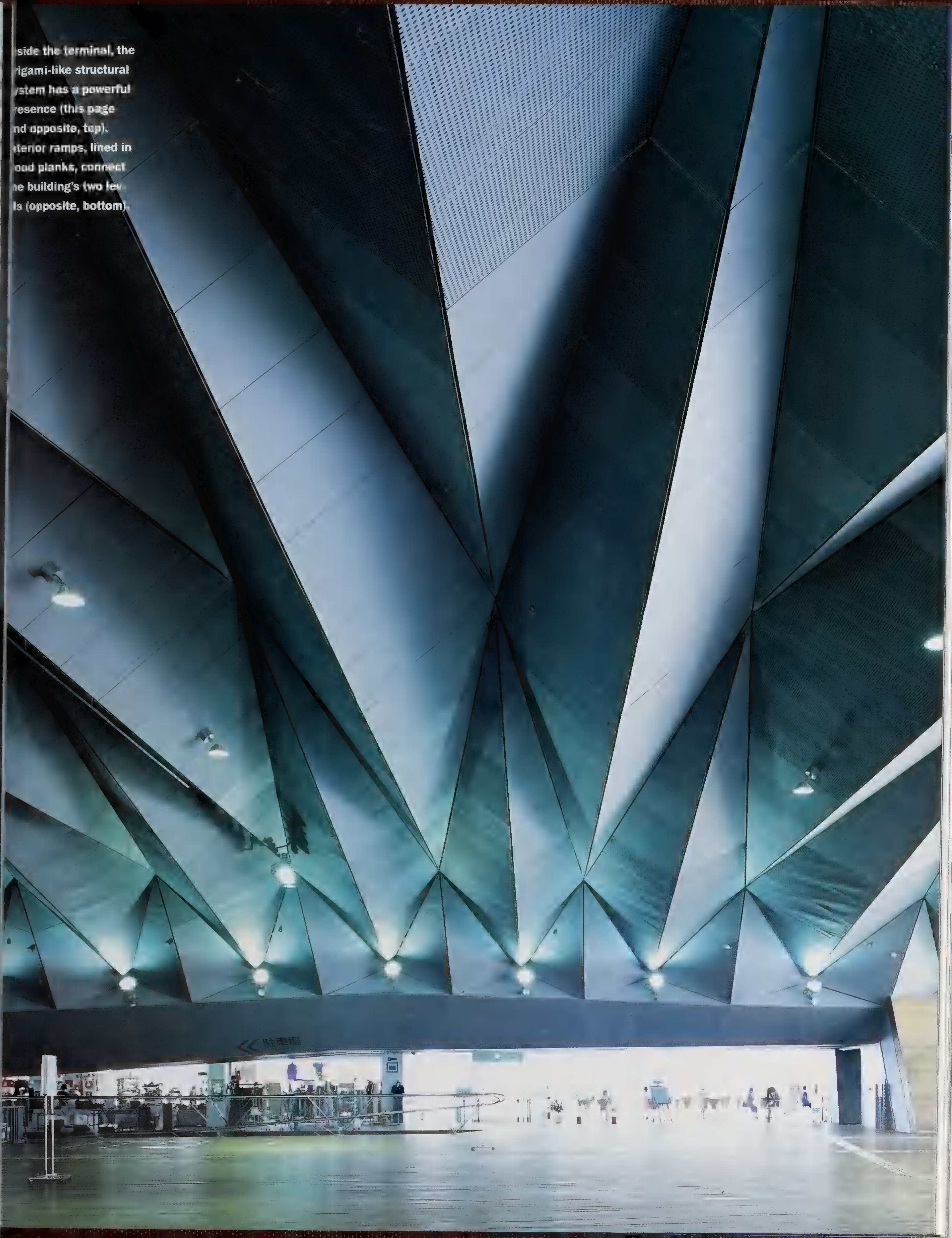
Nail fastenings: *Hilti (stainless steel)*

Glass: *Asahi Glass Building Component Engineering*

Handrails: *Kanematsu Devices*

Wood: *Isolite Insulating Products; Maeda Environmental Art*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.



side the terminal, the
rigami-like structural
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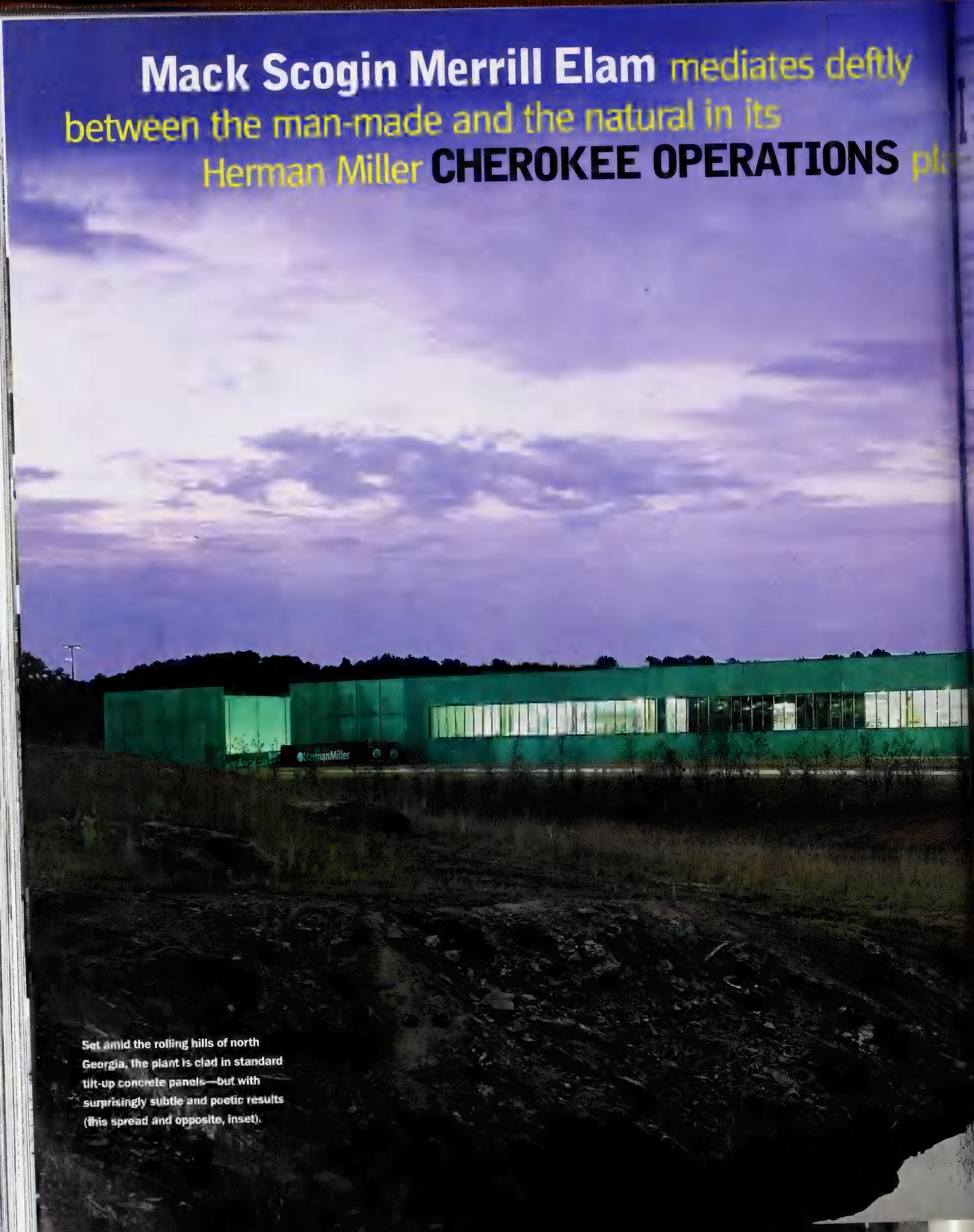
ls (opposite, bottom).

Mack Scogin Merrill Elam mediates deftly between the man-made and the natural in its Herman Miller CHEROKEE OPERATIONS pl



Set amid the rolling hills of north Georgia, the plant is clad in standard tilt-up concrete panels—but with surprisingly subtle and poetic results (this spread and opposite, inset).

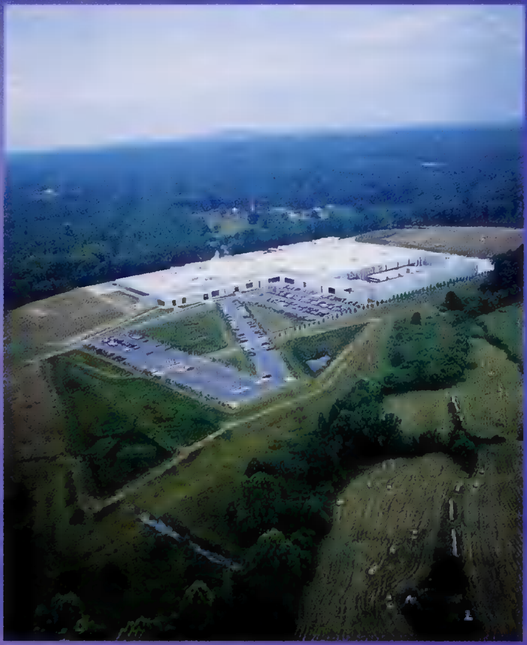
y Christine Kreyling

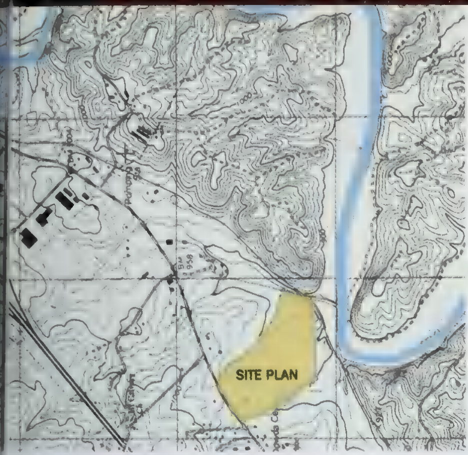
In Cherokee County, Georgia, north of Atlanta, the Appalachian Mountains relax into hills that roll with vigorous contours reminiscent of a Thomas Hart Benton painting. From certain vantage points, the hills read as a series of layered planes receding into the orizon. A similar language of layering emerges in the Herman Miller herokee Operations plant by the Atlanta firm of Mack Scogin Merrill lam Architects.

At the outset, furniture manufacturer Herman Miller presented straightforward program—to merge, under one roof, the operations of s three separate Georgia facilities for office-system production and disribution. One of those facilities, located in Roswell, had been designed early 20 years earlier by Mack Scogin, AIA, and Merrill Elam, AIA, then orking in the offices of Heery & Heery [RECORD, January 1983, page 22]. But subsequent changes in property values and land use, coupled

hristine Kreyling is Nashville Scene's *architecture and urban-planning critic.*

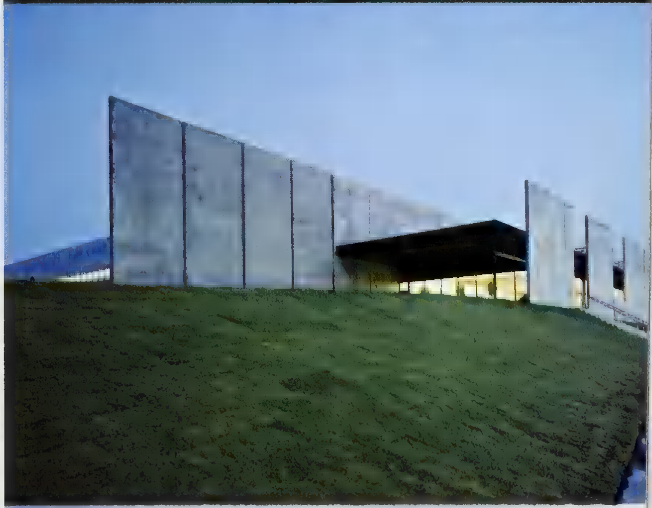
roject: *Herman Miller Cherokee perations plant, Canton, Georgia*
rchitect: *Mack Scogin Merrill Elam rchitects—Mack Scogin, AIA, principal in charge; Lloyd Bray, AIA, and Merrill Elam, AIA, collaborating principals; Tim Harrison, project architect*
Landscape architect: *Michael Van Valkenburgh Associates—Matthew Urbanski, principal*

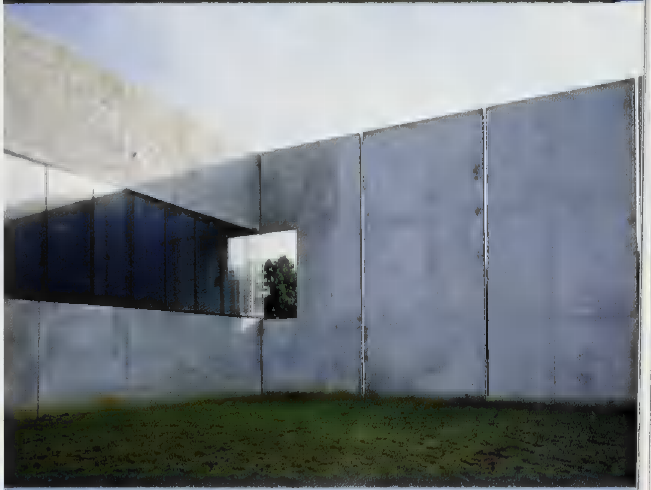


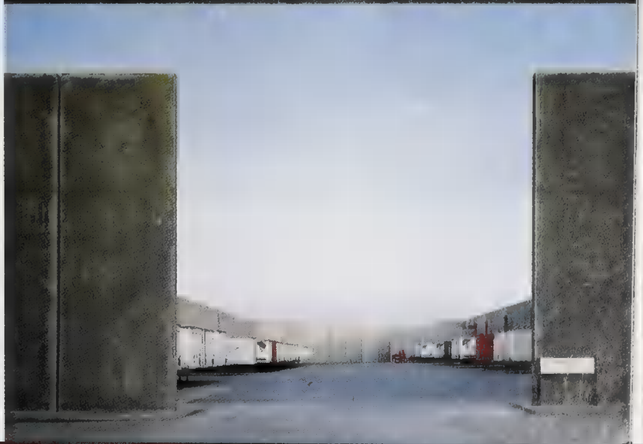


Tilt-up concrete slabs screen the entry route into the building (opposite, bottom). Openings within the slabs and thin slots between them create a pattern of repetition and variation that evokes the rhythm of the assembly line (this page, photos at right). Truck containers, used for storage, occupy a yard bound by concrete walls (bottom right). Trucks, extending out from the loading docks, accentuate the long, low character of the building (opposite, top). A state highway along the site's northwest edge provides the main access to the plant, while to the site's southeast, views open up toward the Etowah River and some of its tributaries (above left).

PHOTOGRAPHY: © TIMOTHY HURSLEY, EXCEPT HELEN HAN/MACK SCOGIN MERRILL ELAM ARCHITECTS (TOP RIGHT)







A forest of telephone poles, some holding lighting, punctuates the parking lot (this page and opposite), mediating between the building and surrounding hills. Wildflowers bloom in the meadows (right). Ivy will eventually cover the inside of the concrete screening walls (below), "greening" close-range views from within the glazed office areas.

with the inefficiencies and costs of decentralization, prompted the company to consolidate. The new plant, as Herman Miller engineers calculated, called for a 330,000-square-foot space all on one level.

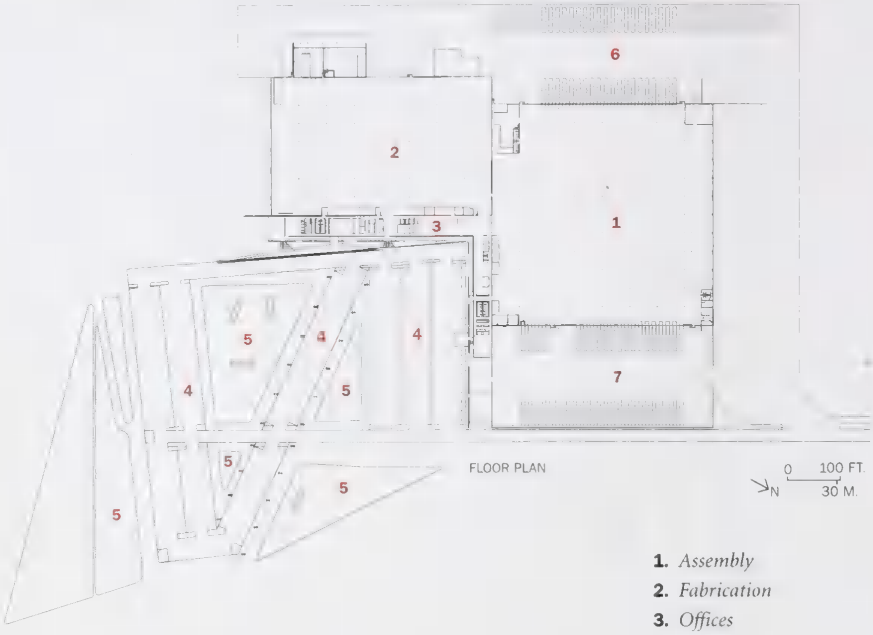
The solution required the precision of smoothly meshing gears. In transforming a manufacturing flow diagram into architecture, the designers had to efficiently and economically shelter the path leading from raw materials, through fabrication and assembly, to trucks poised for product delivery to the world. Large parking aprons would accommodate truck containers—an inexpensive means of inventory storage. Minimal showroom and office space were needed. And a lean budget of $17.9 million set a cap of $55 per square foot.

For such a large footprint, rolling terrain is not the obvious choice. In fact, Herman Miller selected a site in Cherokee County only after receiving inducements, such as local tax abatements, job-training assistance, and infrastructural improvements. In Canton, the county seat, the company found a reasonably flat site: 70 acres of open pasture that required some grading but no removal of dirt or trees.

The massing and site plan—with landscape design by Matthew Urbanski of Michael Van Valkenburgh Associates—open the building's sight lines to the rear, away from the road and toward the property's southwest edges, licked by the Etowah River and its tributaries. "The idea was to retain the feel of the original promontory, to take advantage of the views of hills and river," explains Elam. The forms and style, however, are decidedly not suburban picturesque. As she puts it, "We chose not to domesticate."

Instead, architecture and landscape speak a complementary idiom of simple materials shaped into severe, consciously manipulated forms. A major goal was to distinguish human from machine space. "This is a big place," Elam explains. "You have to be selective about making 'moments,' surprises—detailed human encounters with site and building."

The final results reveal appropriately huge, boxlike sheds for fabrication and assembly. Adjacent, but slightly staggered in plan, they have tilt-up concrete walls with corrugated metal ceilings and a steel truss system overhead. Perimeter skylights articulate the shed walls and provide balanced illumination for the truck-loading docks that flank the assembly zone. Within the great scale of the manufacturing processes, glazed doors signify access for people. Similarly, a transparent layer of offices—forming a thin, L-shaped zone along the assembly and fabrication sheds—defines with storefront glazing the project's most intimately scaled spaces. Twelve-foot-high picture windows open up views between offices and manufacturing. At the front of the building, large, thin tilt-up concrete slabs form two parallel screening layers, connected to the building core by steel joists. Penetrating these layers, the entry route is democratic, welcoming the arrival of both white- and blue-collar workers, as well as visitors, through a central door.



1. *Assembly*
2. *Fabrication*
3. *Offices*
4. *Parking*
5. *Water filtration*
6. *Receiving*
7. *Shipping*

The manufacturing areas (opposite) evoke a huge, finely tuned machine. Glass walls inside the offices (below right) yield views into assembly and fabrication zones. Herman Miller products furnish the offices and a lounge (below left).

Openings in the tilt-up slabs create a pattern of repetition and variation that evokes the assembly-line process. The fenestration frames views from within, while thin slots between the panels allow the sun to cast precise slashes of light—examples of what Elam calls "moments." Outside, the rhythm of apertures turns a simple box into an exploration of geometry—a play of light and shadows worthy of a De Chirico painting.

The architects selected tilt-up concrete in part for its economy—but this method also holds a more-than-respectable place in the history of American architecture. Irving Gill and then Rudolph Schindler used it to pioneer concrete construction in southern California in the early 20th century. In more prosaic applications, the technique is ubiquitous in north Georgia today. "Tilt-slab is a local custom for warehouses and transportation facilities—it's a method tried and true," Elam says. "But the concrete is usually painted. We were going for honesty of materials."

The need for economical solutions, done with style, influenced not only the building, but also the landscape design. The challenge, according to Urbanski, entailed storm-water management on a site with rivers and streams on three sides. Water quality had to be maintained, even where impervious surfaces tend to concentrate the runoff. "The normal solution," Urbanski says, "is to jam parking close to the building, and then link both by piping, with fairly deep storm-water retention ponds farther away." Instead, the landscape designer devised a more mutually beneficial way to recombine the same three components: building, traffic infrastructure, and storm-water filtration.

Urbanski made what he describes as a "collage" of shallow ponds distributed across the asphalt parking area. The shallowness, he says, helps prevent "a violent change in pond ecology when it rains—so you can put plantings in them and create marshland." By eliminating the need for curbs, drain inlets, and extensive piping, this strategy reduced infrastructure costs—and, as the landscape architect suggests, "added visual interest by breaking up the scale of parking with a variety of shapes."

Those shapes include hedgerows of trees bordering the marshland. A "forest" of phone poles, some of which support lighting, also punctuates the parking lots. The poles are taller and more numerous than the lighting required, but they give the space vertical definition, providing a transition between the building and the surrounding hills and valleys.

Roof and truck-apron runoff flows to the front of the site. "Such a giant pulse of water is too violent for marshes," Urbanski explains—so, in front of the building, he created a large pond, excavated down to the bedrock. The pond's organic shape contrasts with the building's geometry, reinforcing tension among natural, apparently natural, and explicitly constructed elements. While the green infrastructure and its processes mimic nature, the orthogonal concrete forms are clearly man-made.

"We haven't invented anything here," says Elam. "All the materials are standard off-the-shelf. What we were looking for was not experimentation, but a different way of assembling things." ■

Sources

Tilt-up concrete: *T & M Tilt-Up*

Zinc cladding: *VM Zinc (preweathered Anthra-Zinc)*

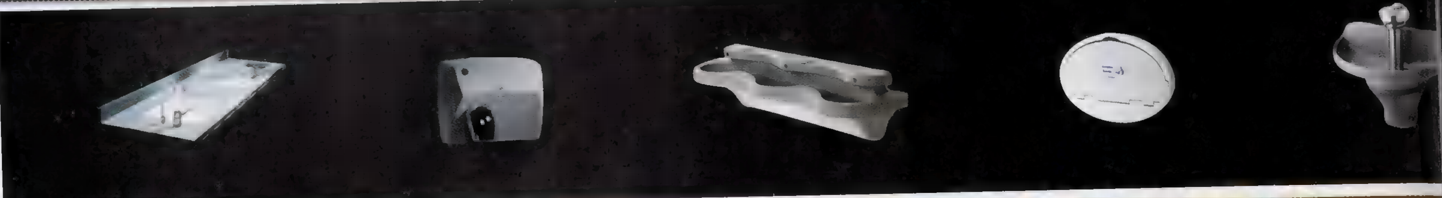
Exterior paint: *Tnemec*

Skylights: *Naturalite Skylight Systems; Polygar Solar Grade*

Fabric wall panels: *Herman Miller*

Glazing system: *Trainor Glass (storefront)*

www For more information on the people and products involved in this project, go to Projects at ***architecturalrecord.com***.



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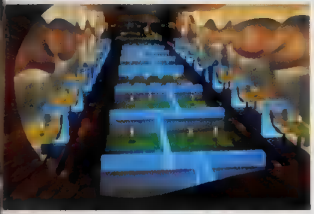
This Year's Models

ARCHITECTS AND INDUSTRIAL DESIGNERS ARE CREATING DINING PLACES THAT CAN COMPETE WITH OTHER FORMS OF ENTERTAINMENT FOR THE CONSUMER'S ATTENTION.

1.

New York City

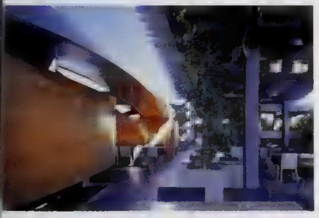
As designed by Andre Kikoski, a dining platform hovers above a frame of water in the cellar of what had been a neighborhood bodega.



2.

Philadelphia

Karim Rashid combined the logic of the Cartesian grid with the sensuality of soft, swirling forms at a restaurant for Iron Chef Masaharu Morimoto.



3.

Los Angeles

Richard Cutts Lundquist, AIA, designed a modern oasis that sets this spacious Korean restaurant apart from all of its competition.

4.

Reykjavik, Iceland

Colorful lighting, sleek furniture, and high-tech materials give a slightly surreal spin to a club designed by British expatriate Michael Young.

By Clifford A. Pearson

The life of most restaurants is nasty, brutish, and short—just like that of humankind, according to Thomas Hobbes. Even the places lucky enough to earn praise and attract hordes of patrons tend to lose their appeal after a few years, then quietly disappear. It's a tough business that rewards the new and the beautiful. While such conditions put enormous pressures on restaurateurs, they create great opportunities for architects. The need to catch the public's eye pushes owners to invest in design, and the fleeting nature of a restaurant's existence encourages experimentation. Don't try designing for the ages here, just make it fresh and engaging. Restaurants reflect the moment. They are now or they are gone.

Once upon a time, dining out was a special event to be treated with aristocratic reserve and fine manners. Today it is entertainment—high, low, and everything in between. Restaurants must compete with movies and plays for consumer dollars. Do we go out for a nice dinner or do we see a Broadway show? How does the interior design of that hip new Asian restaurant compare with the set design of David Henry Hwang's new production of *The Flower Drum Song*? Which is more fun? It's no coincidence that David Rockwell, one of the country's busiest restaurant designers, recently did the sets for the play *Hairspray*.

If restaurant design offers a mirror to the latest trends, what does the current crop of dining places tell us? From the four projects shown in this Building Types Study, we can see a number of ideas and tools in play. One is a bold use of color. Both Karim Rashid at Morimoto, in Philadelphia, and Michael Young at Astro, in Reykjavik, wield vibrant palettes of electric hues. Indeed, they've literally plugged in their designs, making colored light a featured part of the performance and creating a show in which colors change while customers eat and drink.

Andre Kikoski at Suba, in New York City, and Richard Cutts Lundquist, AIA, at Chosun Galbi, in Los Angeles, take approaches that rely more on shaping space than manipulating surface and color. And instead of creating environments that seem to float outside of the everyday realm, they ground their designs in the particulars of place—either the old brick walls of a Lower East Side tenement building or the dancing sunlight of southern California.

It's interesting to note that both Rashid and Young are industrial designers, while Kikoski and Lundquist are architects. Such blurring of professional boundaries isn't surprising in a society that sees dining as a subset of entertainment and treats restaurants as products with spin-off potential and cross-marketing opportunities. ■

www For additional restaurant projects, and more information on the people and products involved in the following projects, go to Building Type Study at ***architecturalrecord.com***.

Suba
New York City

1

ANDRE KIKOSKI HAD TO DIG BELOW THE SURFACE (AND INTO THE CELLAR) OF AN OLD TENEMENT TO CREATE A HIP NEW PLACE TO BE SEEN.

By Elizabeth Harrison Kubany

Architect: *Andre Kikoski Architect—Andre Bassim Kikoski, AIA, partner in charge and designer*
Owner: *Suba*
Engineers: *Gilsanz Murray Steficek (structural); Sharon Engineering (m/e/p and structural)*
Lighting consultant: *Ann Kale Associates*
General contractor: *Suba*

Size: *4,000 square feet*
Cost: *$1.98 million*

Sources
Storefront system: *Kawneer*
Glazing: *Corona Glass*
Structural steel for stair and ramp: *Colonial Steel*
Stainless-steel bar grating: *McNichols Metals*
Millwork: *Custom by Heights Woodworking*
Bar lighting: *Light Solutions*
Track lighting: *Halo*
Submersible lighting: *Hydrel*
Step lights: *LucePlan*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

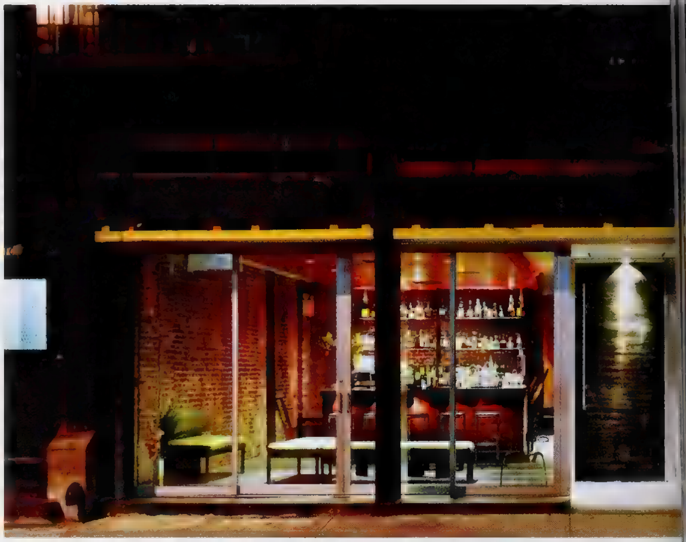
The New York City restaurant scene sometimes seems borderless. On any block, in any neighborhood, at any time of day or night, wonderful discoveries—both culinary and architectural—can be made. Located on a desolate block of Manhattan's Lower East Side, a neighborhood in the throes of gentrification, Suba offers one such surprise.

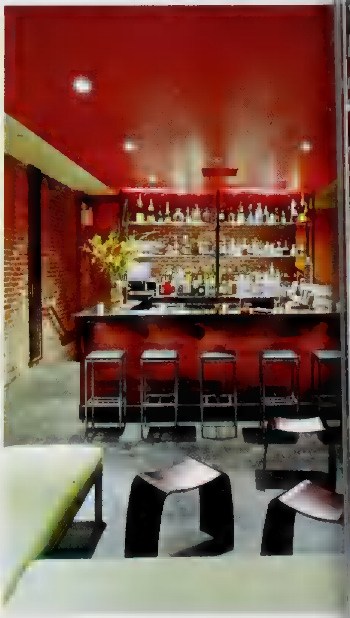
Program

When he first saw the 1909 tenement building that is now Suba's home, New York City architect Andre Kikoski needed to use all his imagination to envision what might be. A childhood friend, attorney-turned-real-estate-entrepreneur Whitney Quillen, had purchased the property and wanted Kikoski to transform it into a restaurant. The place was "horrifying," he says. The two bodegas at ground level had been forced to close by the Drug Enforcement Agency, and a rear apartment and backyard were filled with trash and vermin.

Solution

Kikoski slipped the restaurant within the brick shell of the tenement, designing a ground-level lounge as a dark and intimate space with a bar crafted of walnut and industrial metal and fitted with sleek furniture that he designed. The lounge, though, turns out to be just one of Suba's three main spaces, a teaser for what is hidden below.

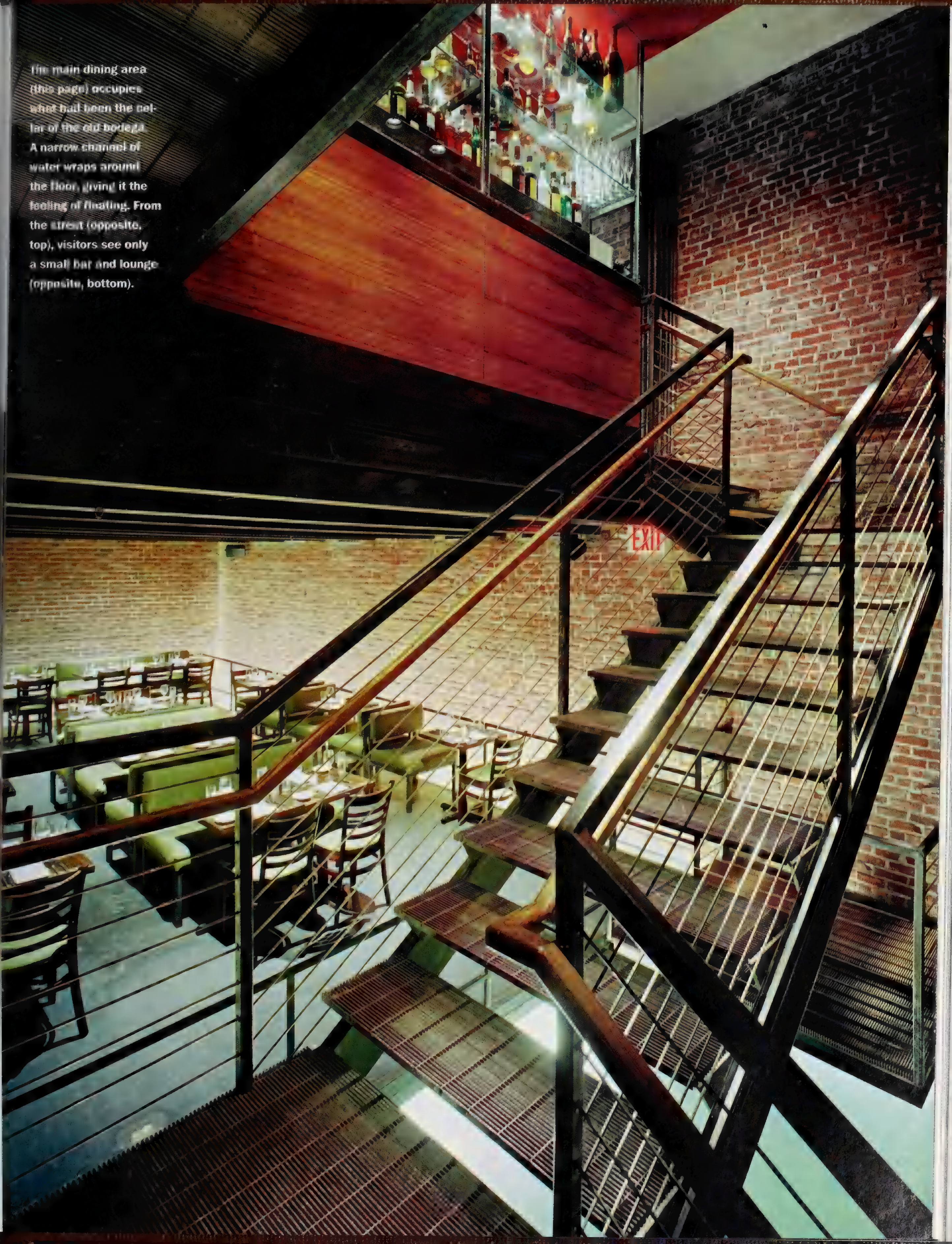




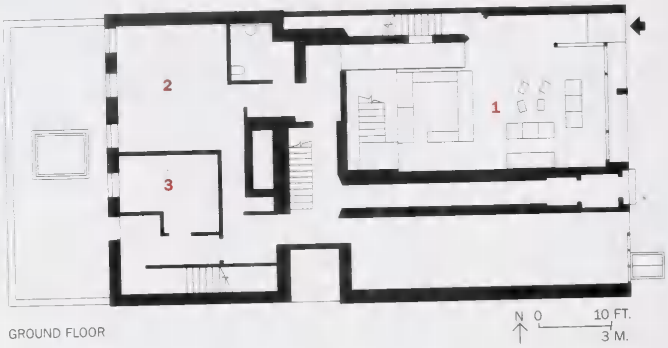
Behind the bar, patrons descend a staircase of stainless-steel bar grating suspended over an 18-foot-long illuminated reflecting pool. The staircase is a microcosm of the entire restaurant: raw, industrial, and meticulously detailed. The architect even measured the width of his wife's Manolo Blahnik stilettos so the stair's metal grating would be tight enough to prevent fashionistas from losing their heels as they walk up or down.

At the bottom of the stair, a small bridge leads to the dining "grotto," the Lower East Side's answer to the Four Seasons Pool Room—albeit somewhat grungier and turned inside out. Instead of

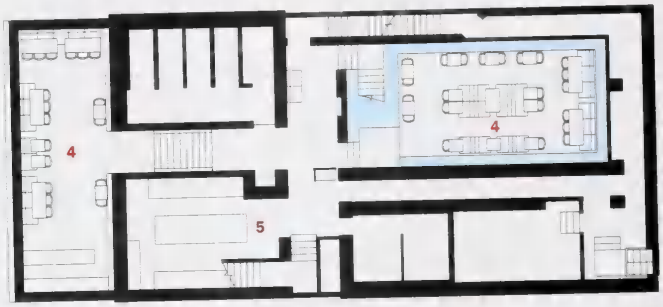
Elizabeth Harrison Kubany is a contributing editor to RECORD.



The main dining area (this page) occupies what had been the cellar of the old bodega. A narrow channel of water wraps around the floor, giving it the feeling of floating. From the street (opposite, top), visitors see only a small bar and lounge (opposite, bottom).



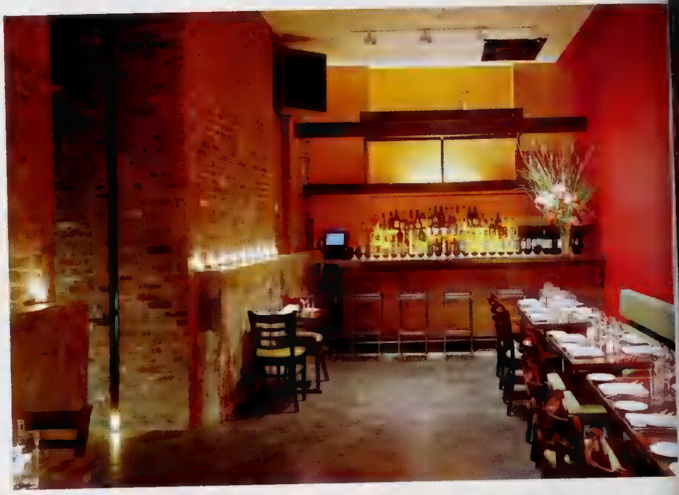
GROUND FLOOR

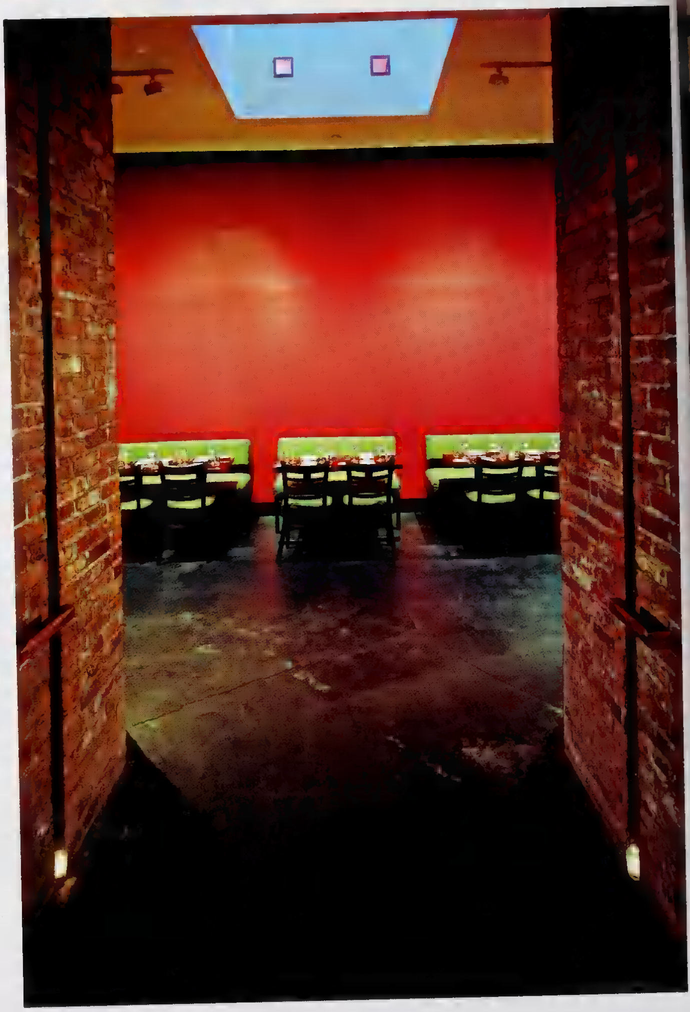


LOWER LEVEL

1. *Bar/lounge*
2. *Storage*
3. *Office*
4. *Dining*
5. *Kitchen*

While industrial materials, such as brick, steel, and concrete, set the tone for most of the restaurant, "Frida Kahlo and Diego Rivera" colors provide a different accent to the skylight lounge on the lowest level (below and bottom). Lights in the water in the grotto (opposite) cast moving shadows on the wall.





dining tables surrounding a pool, the water at Suba (7,000 gallons of it) surrounds the tables. Fifty underwater lights (designed by Anne Kale Associates, the firm that relit the Four Seasons' pool) shine through the gently moving water to cast shimmering ripples of light across the room's exposed brick walls and ceiling vaults.

Half a level below the grotto, in a space excavated from what had been the rear yard, is the skylight lounge—ironically, the only room in the restaurant with views to the sky. Although not large, the lounge has 14-foot ceilings and graceful proportions, which give it an expansive feel.

To create this subterranean playground required expensive preparation. In fact, almost three quarters of the project's budget went for excavation, structural design, and mechanical/electrical/plumbing work. Workers removed more than 8 feet of earth for the grotto and 10 feet for the skylight lounge. They inserted steel beams throughout the building and tied these new members to the existing structure.

While most of Suba is new—including its systems, spaces, and structure—Kikoski retained the old building's brick fabric to create a seamless blending of past and present. Even when he had to move a wall, he reused the old brick as much as possible. To embellish this simple materials palette, he added a few contemporary flourishes, such as tinted concrete floors polished with automotive wax and "Frida Kahlo and Diego Rivera" colors on a few of the surfaces in the skylight lounge.

Commentary

These days, when restaurants often resemble the sets of Broadway shows, Kikoski set out to create a restaurant that was all about space and architecture rather than surface and flash. Suba is defined by the architect's reverence for New York City. New York, he says, "is all about things that became other things." So he tried to respect the original tenement as much as possible. While cleaning and restoring the old fabric, he inserted contemporary furnishings and a modern sense of space. As a result, the restaurant seems to be of and about Manhattan's Lower East Side while serving as a magnet for a less rooted, more global culture of pretty young things sipping trendy cocktails and grazing on tapas. ■

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Morimoto
Philadelphia

2

KARIM RASHID BRINGS AN INDUSTRIAL DESIGN AESTHETIC TO A BOLD RESTAURANT THAT'S HANDMADE—JUST LIKE THE SUSHI ROLLS.

By Clifford A. Pearson

Designer: *Karim Rashid—Karim Rashid, principal; Jalan Sahba, project manager; Lisa Rusakova, Aurelie Brunet, architects*
Client: *Stephen Starr*
Lighting designer: *Focus Lighting*

Size: *10,800 square feet*
Cost: *$1.3 million*
Completion date: *November 2001*

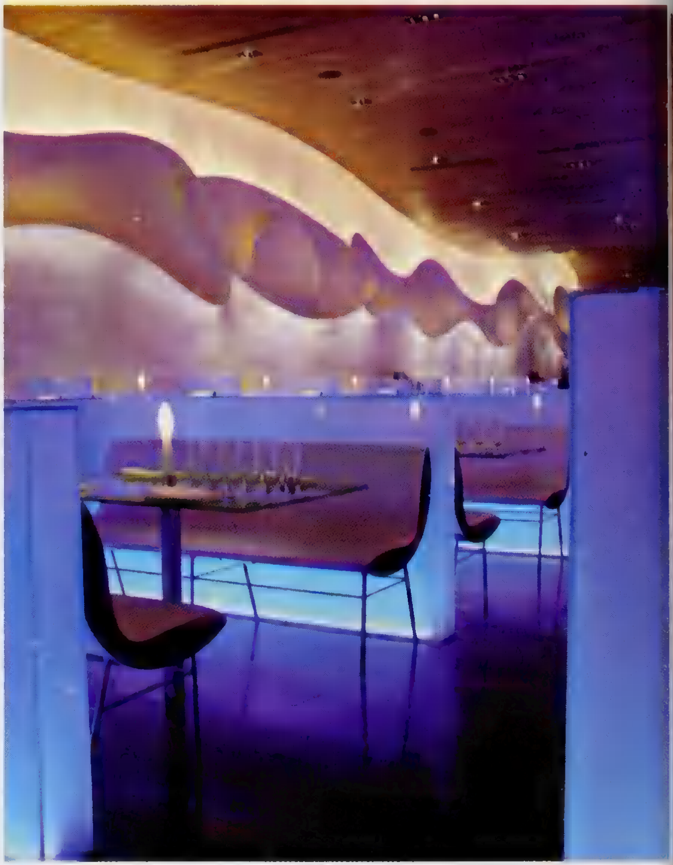
Sources
Curtain wall: *Paul Rabinowitz Glass Company*
Booth and sushi-bar seating: *Galerkin Design*
Lobby seating and lounge ottomans: *Nienkamper*
Glass tables: *Curvet USA*
"Candle" table light: *Custom by Karim Rashid*

WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Take three oversize personalities, shake well, and pour into a long, tight space. Sounds like a recipe for disaster. But somehow it created the very hip, very successful restaurant Morimoto. Like one of those Hollywood films with a cluster of big names, the project brought together a powerful producer—Stephen Starr, Philadelphia's restaurant mogul; a strong-willed director—designer Karim Rashid; and a popular star—chef Masaharu Morimoto, of Nobu and *Iron Chef* fame. While all three admit they didn't always get along, their collaboration produced a restaurant that has pleased both food and design critics.

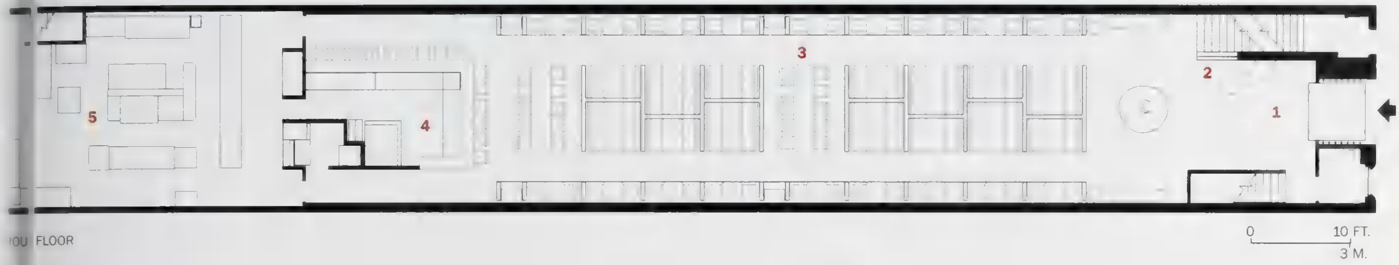
Program

A former rock-concert promoter and club owner, Starr reinvented himself in the 1990s as a restaurateur. Having hit it big with a martini bar called Continental; a pan-Asian restaurant, Buddakan; a Parisian bistro, Blue Angel; and other themed establishments, he decided Philadelphia was ready for a modern Japanese restaurant that would break free of stereotypes. "I wanted a place that reflected the new Japan, not Western ideas of old Japan," he explains. He hired New York City–based industrial designer Rashid to find an architectural expression for chef Morimoto's inventive fusion cuisine. Just as Morimoto's cooking crosses national boundaries, Rashid's work blurs distinctions between product and architectural design.



When Starr showed Rashid two locations for the restaurant—one conventionally proportioned and the other just 21 feet wide and 240 feet long—the designer recommended the more difficult, narrow property. "It's an amazing space," exclaims Rashid. "It forces you to be creative."

Fitting a dining room with 122 seats and a sushi bar with 13 stools onto one level was a challenge. But a 19-foot-high ceiling relieves any sense of claustrophobia and allowed Rashid to tuck a small bar and lounge onto a mezzanine overlooking the dining room. Rest rooms and food-preparation spaces occupy a basement level.



OU FLOOR

d wrapped the
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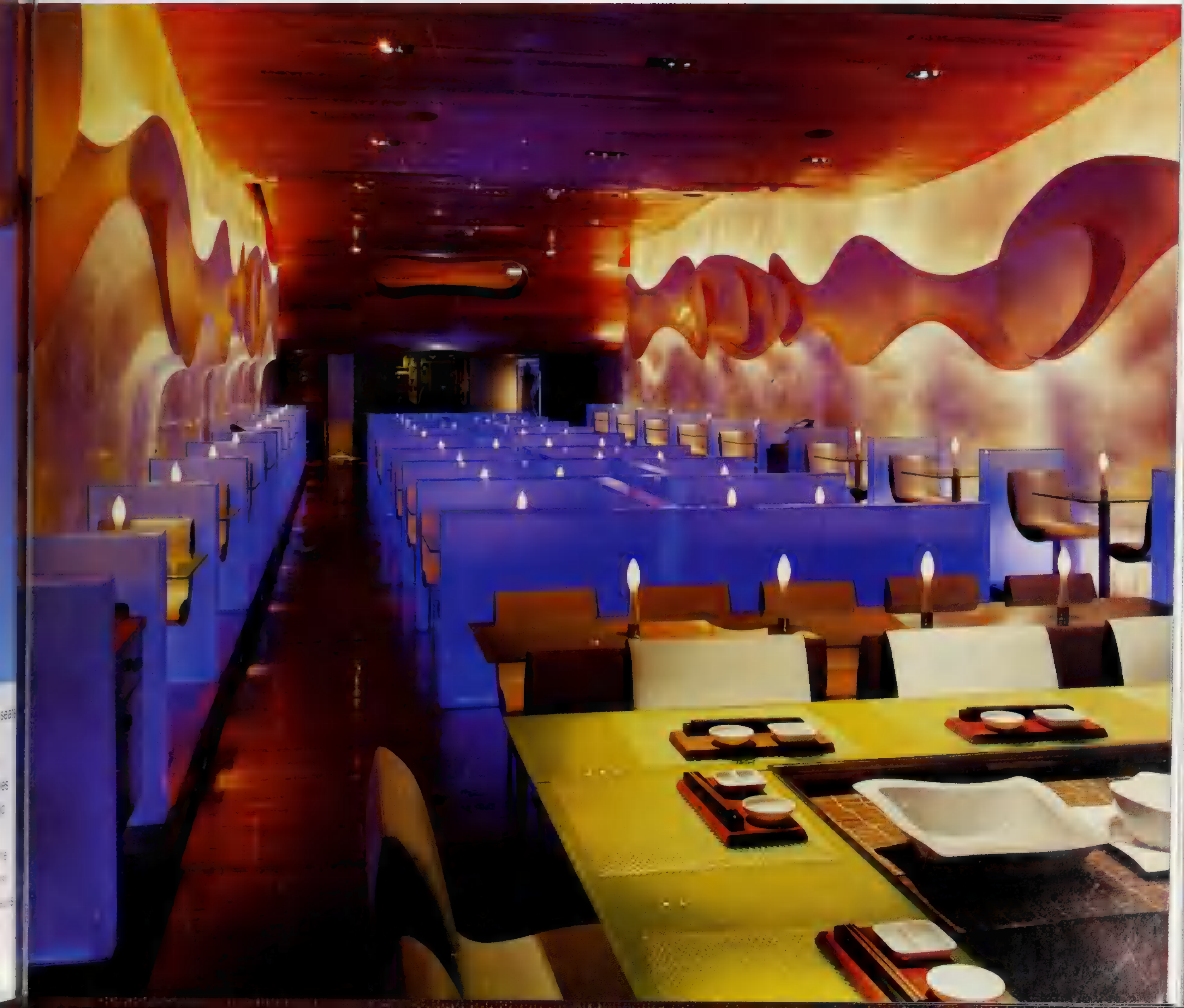
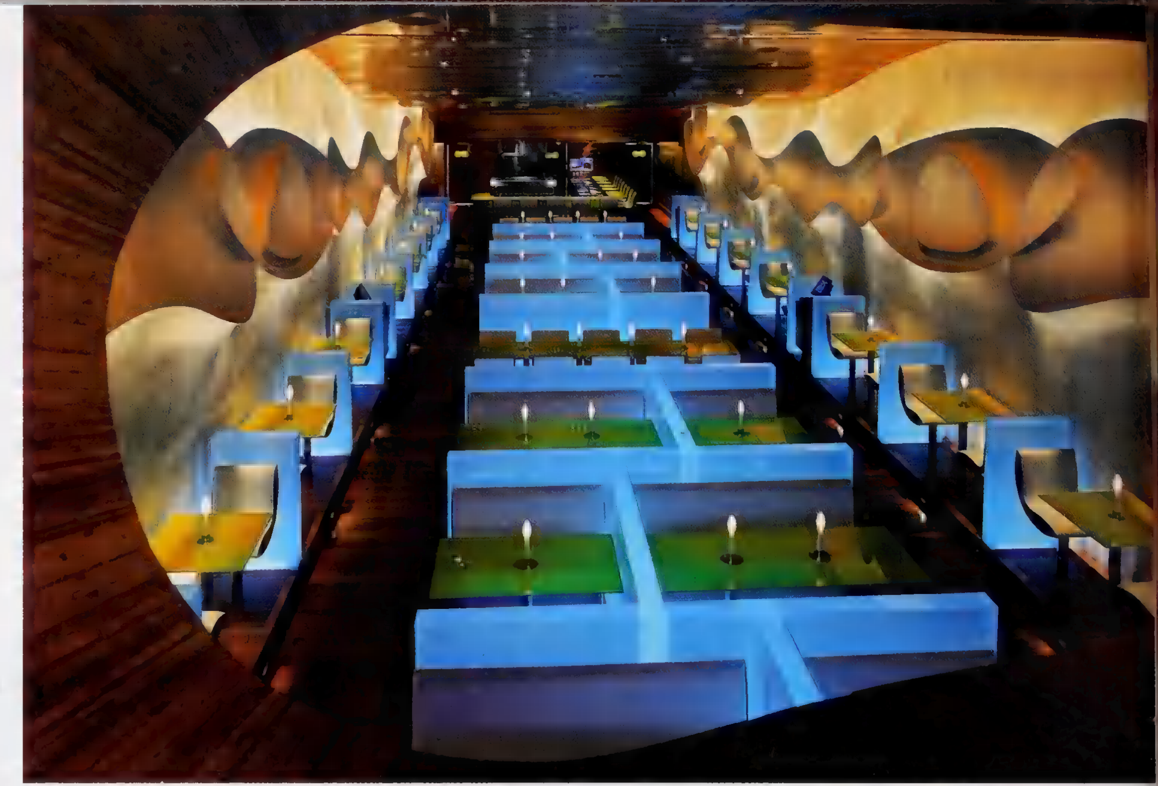
the walls with

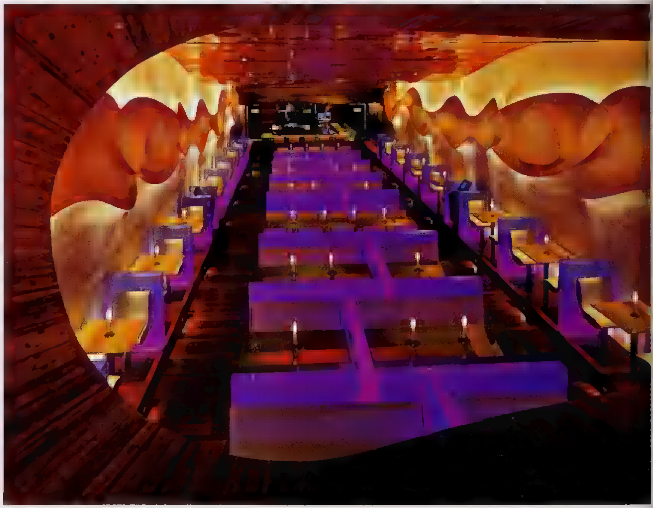
a snaking relief made of a semigloss stucco on top of metal lathe. Chairs and benches are leather clad.

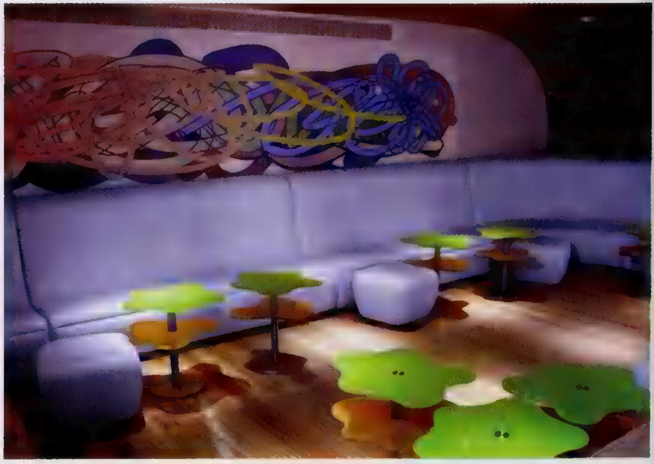
1. *Lobby*
2. *Reception*
3. *Dining*
4. *Sushi bar*
5. *Kitchen*





A mezzanine lounge (bottom) looks onto the dining room (right and middle), where a Cartesian grid of booths and tables marches between biomorphic walls. LED fixtures within the glass partitions change the color of light emitted every 12 to 15 minutes.





Solution

Rashid's design strategy was to wrap the restaurant's interior with soft, organic forms, then anchor it with a rigid grid of seating booths. Using the same computer modeling he employs when developing furniture and other manufactured objects, he designed walls that bulge out as much as 18 inches at mid-height to form a wiggling strip running the length of the restaurant. He animated the ceiling, as well, creating a rolling surface made of bamboo.

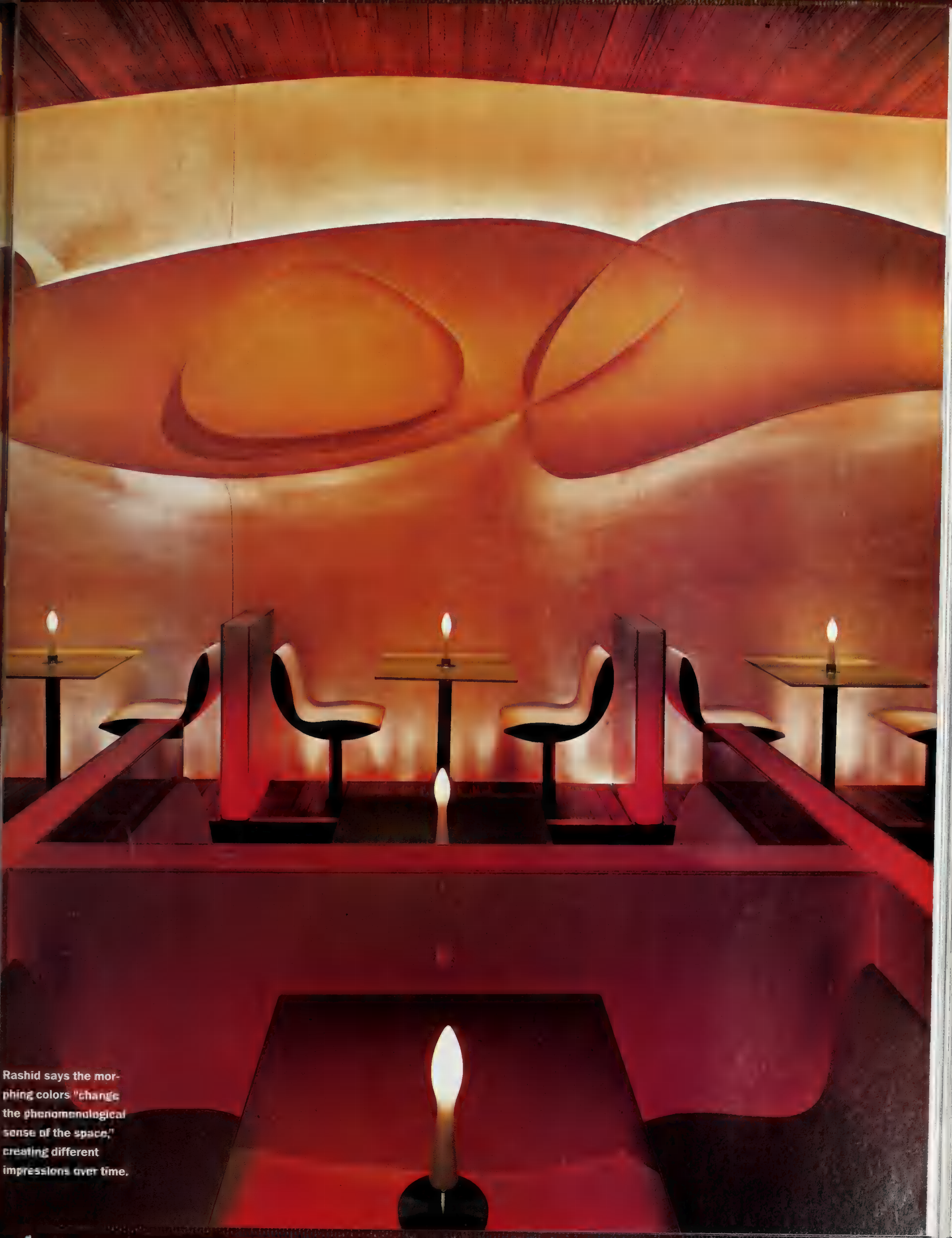
For the seating area, though, he took a more Cartesian approach, lining the two long sides of the restaurant with fixed, two-person tables and running a procession of glass booths with alternating four- and six-person tables down the middle of the floor. Set within the 6-inch-wide glass partitions are light-emitting diodes (LED) that slowly, continuously change color and intensity. Clear green glass tables and off-white leather seating offer neutral keys to the pulsating visuals. In the back of the restaurant, an L-shaped, glass sushi bar provides another calming element.

While Rashid used the same design methodology for this project as he would for a chair or a watch, he wasn't able to build it as a manufactured object. In the end, the biomorphic walls were made the old-fashioned way: with plywood, metal lathe, and hand-applied Japanese semigloss stucco.

During the design process, chef Morimoto made just two requests: that he be visible when working and that customers be able to use the bathrooms without having to touch anything. Excited by the first request, Rashid tried placing the sushi bar in the middle of the restaurant. But the narrow space made this scheme unworkable. So he put the sushi bar in the back but kept it open to view. Downstairs, he eliminated doors to the rest rooms by tucking stalls behind a freestanding partition and specifying automatic faucets and hand dryers.

Commentary

At first glance, Rashid's design seems to rely on one big gimmick: light that changes color. But it works because he couples the trick with a crisp, clean plan, elegant materials, and a bold use of a very long space. While color grabs your eye to begin with, eating at the restaurant turns out to be a more calming experience than you might expect. ■



Rashid says the morphing colors "change the phenomenological sense of the space," creating different impressions over time.

CHOSUN GALBI

Los Angeles

3

RICHARD CUTTS LUNDQUIST, AIA, CREATES A VARIED MENU OF DIFFERENT SPACES TO MATCH THE PIQUANCY OF KOREAN CUISINE.

By Suzanne Stephens

Architect: *Richard Cutts Lundquist, AIA—Richard Cutts Lundquist, principal; Sookja Lee, David Takacs, project team*
Client: *Kyong M. Ji*
Consultants: *Paul Francheschi Engineering (structural); Yoomi Yoon (lighting); Glen C. Drake (landscaping); Henry Park (kitchen)*

Size: *8,000 square feet*
Cost: *Withheld*
Completion date: *Fall 2001*

Sources
Steel structural system: *Young Star Steel and Iron Work*
Metal work and chairs: *Deco Welding & Sheet Metal Works*
Cabinetwork, custom woodwork, fixed seating, and reception furniture: *Bamboo World*

WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Aficionados of Korean barbecue don't usually expect much in the way of design ambience. Pure function—where grilling and dining take place simultaneously around a table—has a way of focusing all thoughts on the savories at hand. However, at ChoSun Galbi (literally "Korean Barbecue"), in Los Angeles, architect Richard Cutts Lundquist, AIA, boldly demonstrates that these dual activities can be enhanced by a rich and varied architectural expression.

Program

The owner, Kyong M. Ji, a well-known restaurateur in the Korean community, owned two restaurants before opening ChoSun Galbi with her husband, who is the chef. This time she wanted to create a venue with a strong design presence that would differentiate itself from the slew of eateries in the Koreatown section of L.A. The site itself was a challenge: a corner lot on busy four-lane Olympic Boulevard noted for a cacophony of noise and visual clutter. Mrs. Ji wanted the restaurant to be a soothing oasis seating about 250 people, with private dining rooms for large groups of families or business people. Her lighting designer, Yoomi Yoon, recommended Lundquist, a former architecture professor of hers, who had worked previously for both Morphosis and Michele Saee, before opening his own office in 1990.

Solution

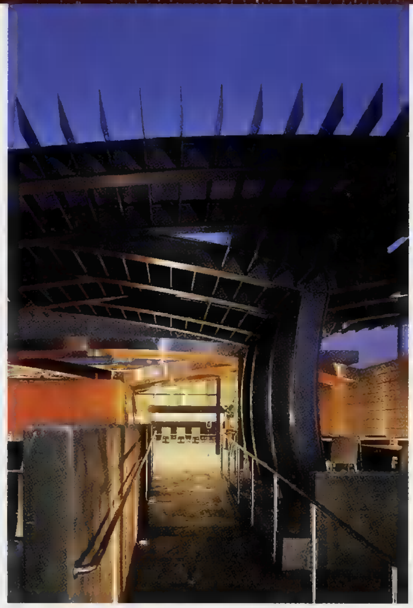
Originally the restaurant was to occupy a renovated brick storefront building. Once the design was under way, however, it became clear that this building had structural problems. So Lundquist replaced it with an economical, low-key, concrete-block structure, while adding more formally active spaces at the rear, where he could place the entrance adjacent to parking for cars.

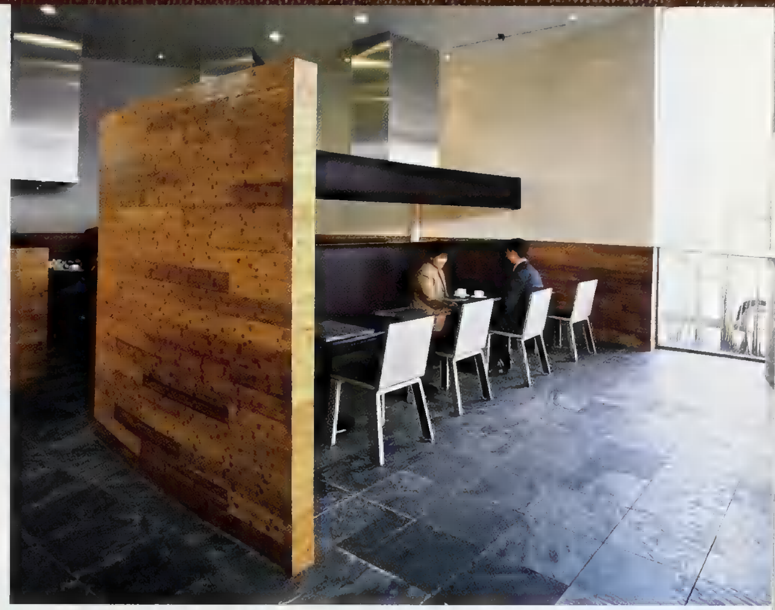
Guests arriving at the rear enter the restaurant along a path that skims by an outdoor dining patio framed by a steel pergola, which is planted with lush vegetation that blocks the view of the cars. The pergola is created from rolled I-beams employed as both curved columns and flying arches, and it carries a trellis of steel fins covered by thick vines of bougainvillea.

Immediately inside the restaurant, two private dining rooms enclosed in basketlike forms of bamboo and steel create a buffer zone between the patio dining area and the restaurant proper. Here, four arches of steel, 4 feet wide and 40 feet long, are placed in a staggered configuration every 20 feet, so that a structure of 80 feet is generated. This formation yields two discrete dining rooms, 20 by 16 feet, with two areas, also 20 by 16 feet, left over for circulation and additional dining. To give the rooms a

PHOTOGRAPHY: © MARK LUTHRINGER (TOP TWO); BENNY CHAN (BOTTOM)

he entrance from he parking lot takes uests past open-air ining under the perola, and past private ining rooms enclosed n bamboo (below), o the interior (near ight), where the bar s located (far right).



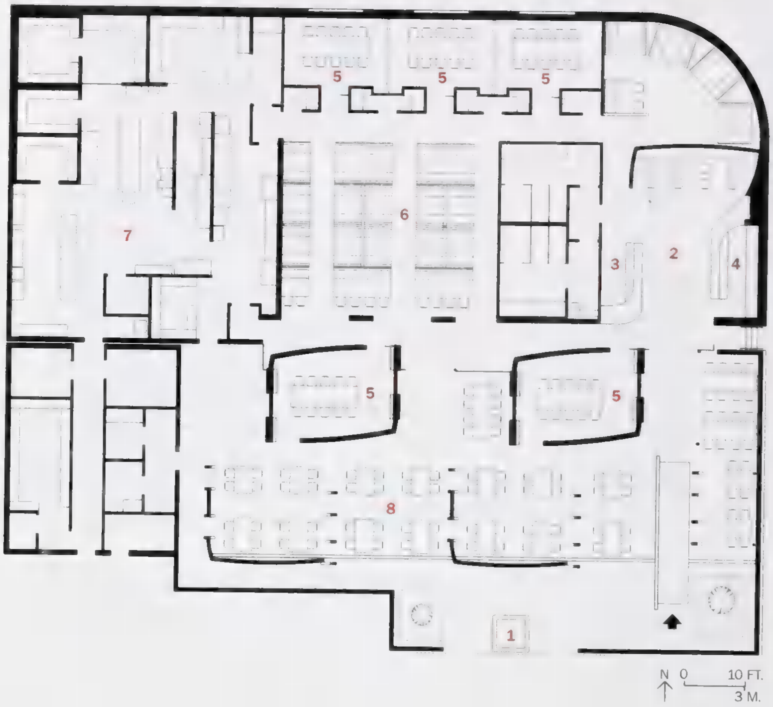


sense of warmth, Lundquist wrapped the ceiling and screen walls with bamboo.

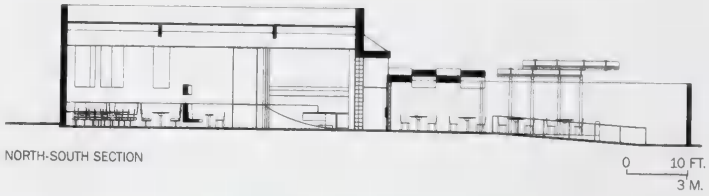
As guests come into the main section of the restaurant, they find themselves at a central reception area and bar, where aluminum countertops mimic the soft curves of the arches in the outer region. From here they enter the main dining room, which, while it may not have a fancy rolled-steel roof or bamboo-screen walls, has a strong architectonic quality by virtue of the cluster of stainless-steel hoods placed over the dining tables. The suspended rectilinear volumes for venting fumes and the banquette seating help subdivide the group of dining tables with barbecue grills into semiprivate alcoves.

A bank of private dining rooms partitioned by plastic mesh screens runs along the perimeter (Olympic Boulevard) wall to accommodate parties of 10 or larger groups of 30 or more. Another room with five tables provides a quasi-private space for diners in the curved corner of the building.

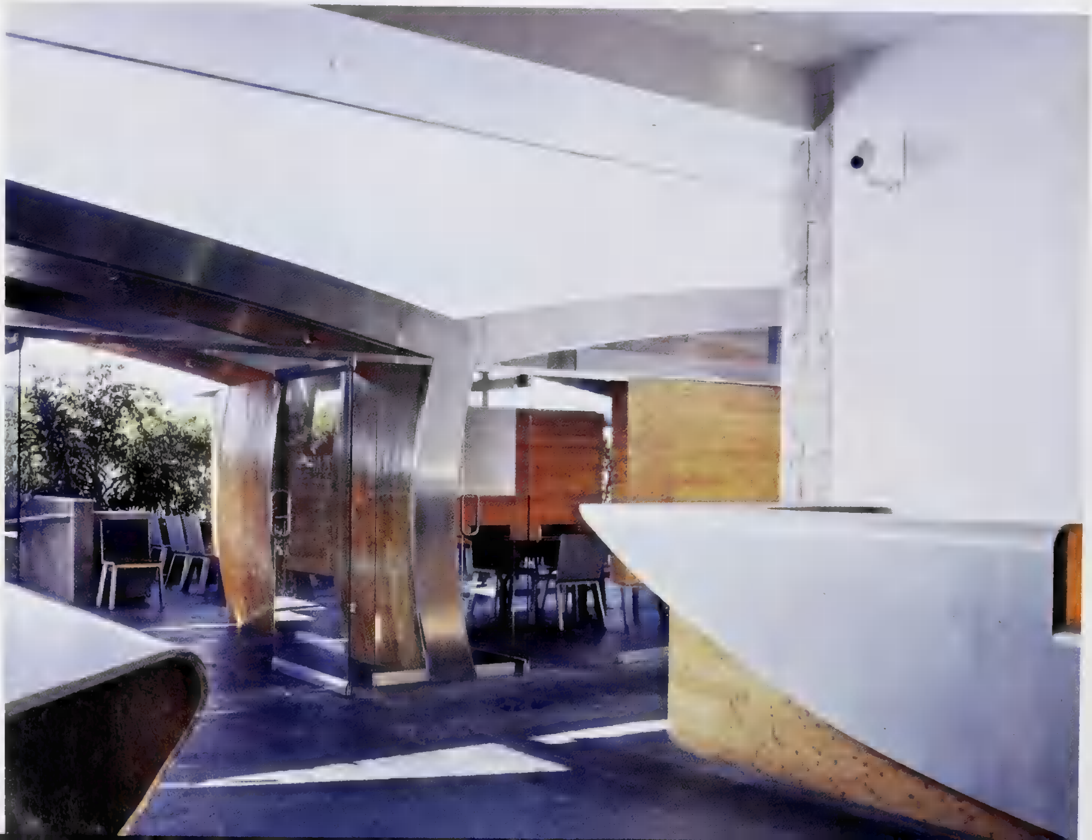
All this interior activity is not very visible from the street, along



1. *Water garden*
2. *Lobby*
3. *Reception*
4. *Bar*
5. *Private dining*
6. *Main dining*
7. *Kitchen*
8. *Patio dining*



NORTH-SOUTH SECTION



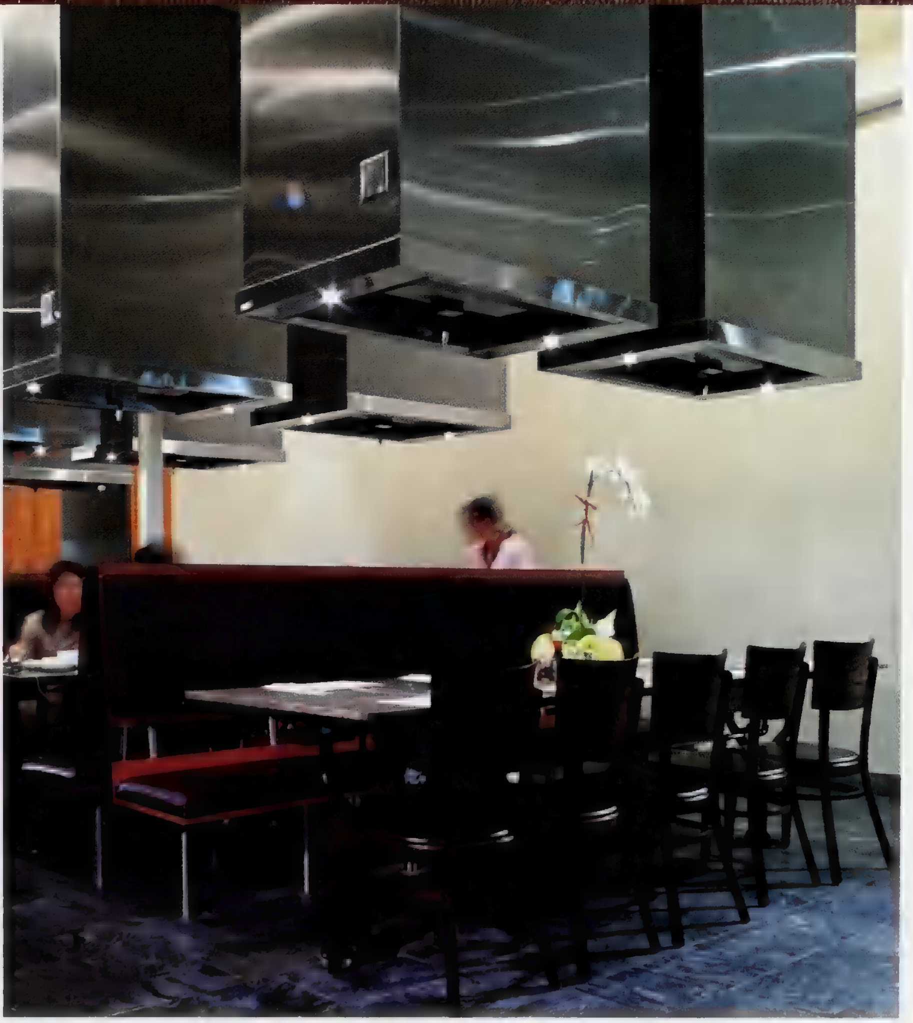
The reception area and bar tops (left) are covered in aluminum plate, while the floor is honed slate. Stainless-steel hoods are the dominant design motif of the main dining area (opposite, top); while bamboo-wrapped steel arches and bamboo-screen walls in the private dining rooms afford privacy with views out (opposite, bottom left). Rolled-steel beams form a pergola over the outdoor dining area (opposite, bottom right).

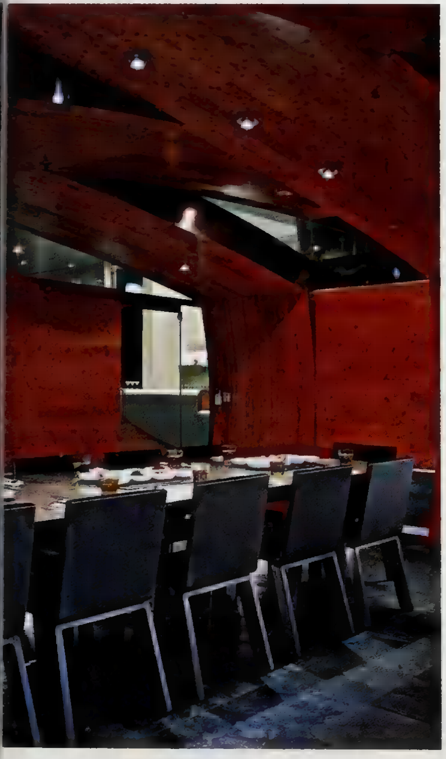
Olympic Boulevard. Here the acade is quite opaque, with the exception of three high windows and creeping fig planting, which offers, as Lundquist puts it, "an architectural surface."

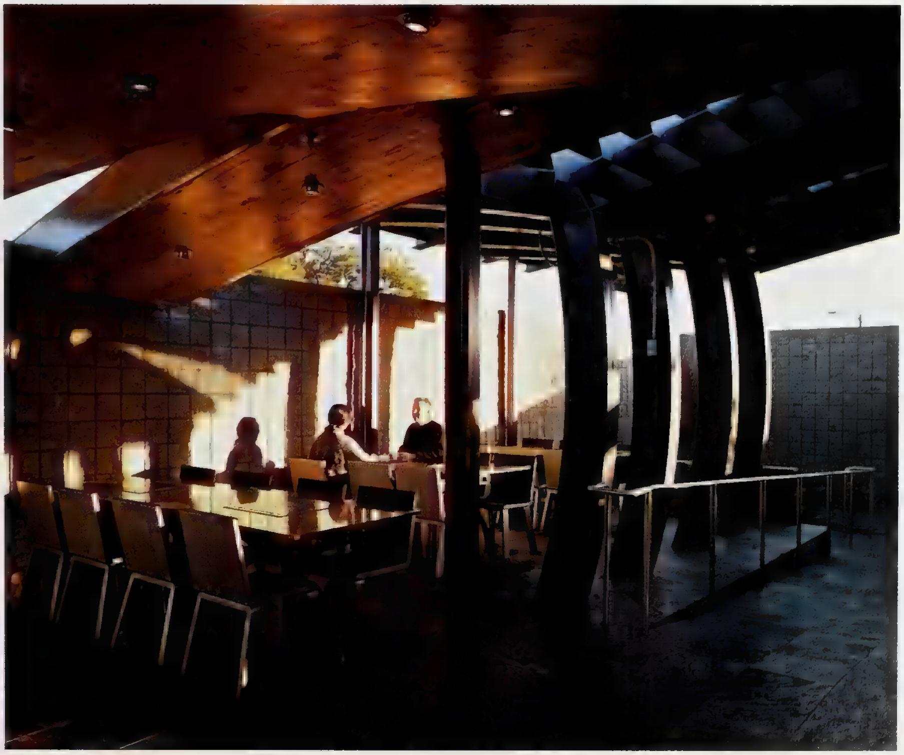
Commentary

Although the restaurant turned out to be an idiosyncratic hybrid of timber-frame roofing and concrete block combined with arcing structures of sculptural, steel-rolled I-beams, Lundquist has developed a series of dining spaces with varying degrees of privacy and openness to the outdoors.

The use of cool and glossy steel, with the warm sheen of bamboo and the luxuriant tropical vegetation, plus the creation of a strong architectural component in the ceiling (whether rolled-steel arches or suspended steel hoods), imparts a forceful character to the interior. The bar off the reception area, which is brightly lit and rather small, is the only element that seems to be an afterthought. But, then again, it probably is. You're not going there just for the martinis. ■







ASTRO
Reykjavik, Iceland

4

MICHAEL YOUNG BROUGHT A BIT OF ARTIFICIAL NATURE INSIDE A 90-YEAR-OLD BUILDING TO CREATE A SEXY NEW HANGOUT FOR THE WITH-IT CROWD.

By Clifford A. Pearson

Designer: *M.Y. Studio—Michael Young, principal; Katrin Petursdottir, graphic design principal; Bill Holding, design team*
Client: *Isfosser*
Lighting designer: *Jeremy Lord*
General contractor: *Isfosser*

Size: *5,400 square feet*
Cost: *Withheld*
Completion date: *April 2000*

Sources
Bar counter and shelves: *Corian*
Lighting: *Eurolounge*
Light clock: *E&Y*
Stick light: *Eurolounge*
Sofa: *Twentytwentyone*
Red-button cushions: *Cappellini*
Custom furniture: *Sawaya & Moroni*

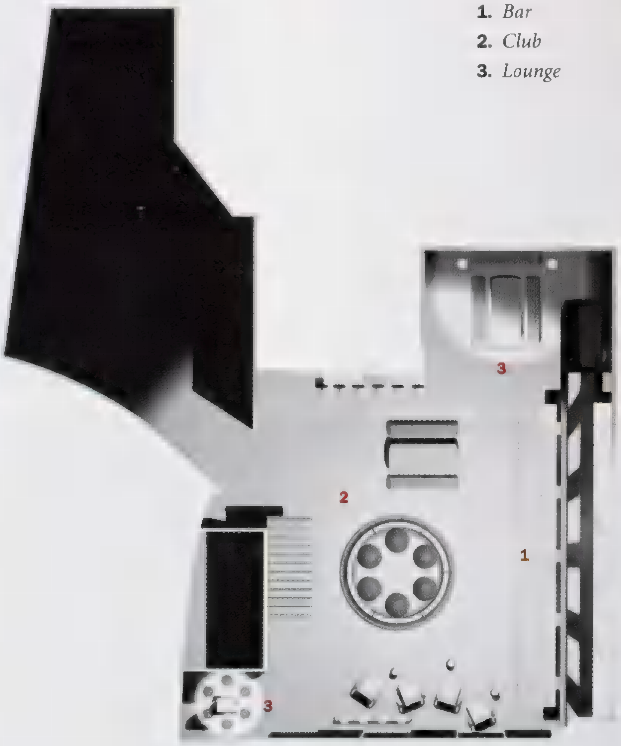
WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com.**

A combination of glaciers, volcanoes, quirky musicians, and cheap airfares from the U.S. and Europe has helped make Iceland an unusual hotspot on the international travel scene. Take your backpack and check out the thermal springs that provide clean energy for the entire country. Or bring your guitar case and roam the clubs of Reykjavik, where design is becoming an important way of attracting a crowd.

British industrial designer Michael Young moved his base of operations to Reykjavik in 1998 after meeting Katrin Petursdottir, an Icelandic graphic designer who became his wife. Having started his own firm in London in 1994, Young made a name for himself designing curvaceous furniture with a vaguely futuristic, slightly pop sensibility. Molded plastic "stick lamps" created for a Japanese company, for example, look like they could have been taken from Woody Allen's *Sleeper* or inspired by the podlike forms of seaweed.

Program

The owners of a nightclub with a fake Victorian design asked Young to give it a completely new identity. Set in a 90-year-old building with rotting wood, the club needed a radical makeover. Though 90 years may not seem a particularly historic age for architecture in other parts of Europe, the local authorities made it clear they considered the building an important piece of Reykjavik's architectural legacy. The new two-level establishment would be more club than restaurant—with four bars and two dance floors—but food would be part of the mix.



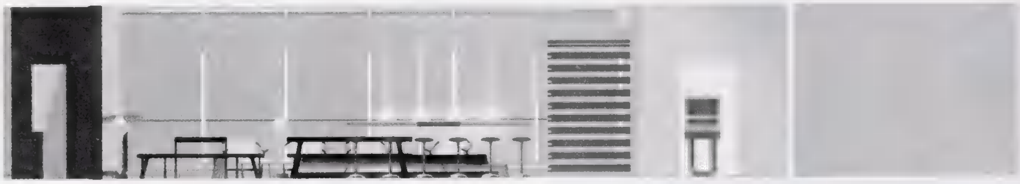
1. *Bar*
2. *Club*
3. *Lounge*

Solution

Young decided to treat the club as a "shell within an outer shell." Instead of engaging the old architecture, Astro creates its own world inside the existing fabric—like a Hollywood diva bringing glamour (and her own entourage) to a bar on the wrong side of the tracks. Required to keep an old fireplace, for example, Young preserved the relic but sealed it off so no one could see it.

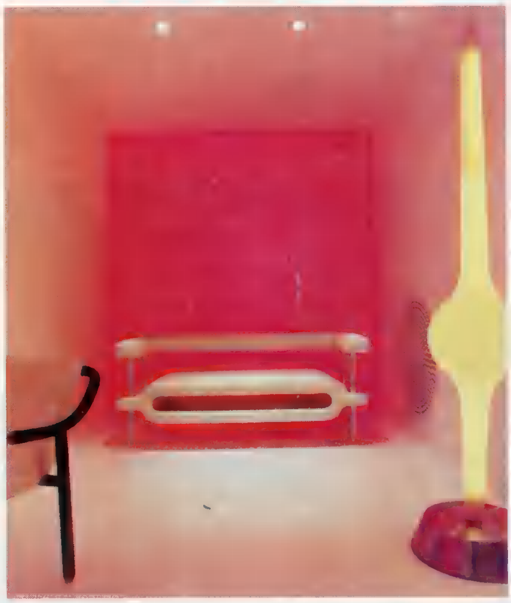
Understanding that a design is only as good as it's built, Young decided to leverage to the fullest local skills in steelwork and concrete construction. So, bent steel tubes support the bar on the main level and concrete elements such as floors and a circular "swimming

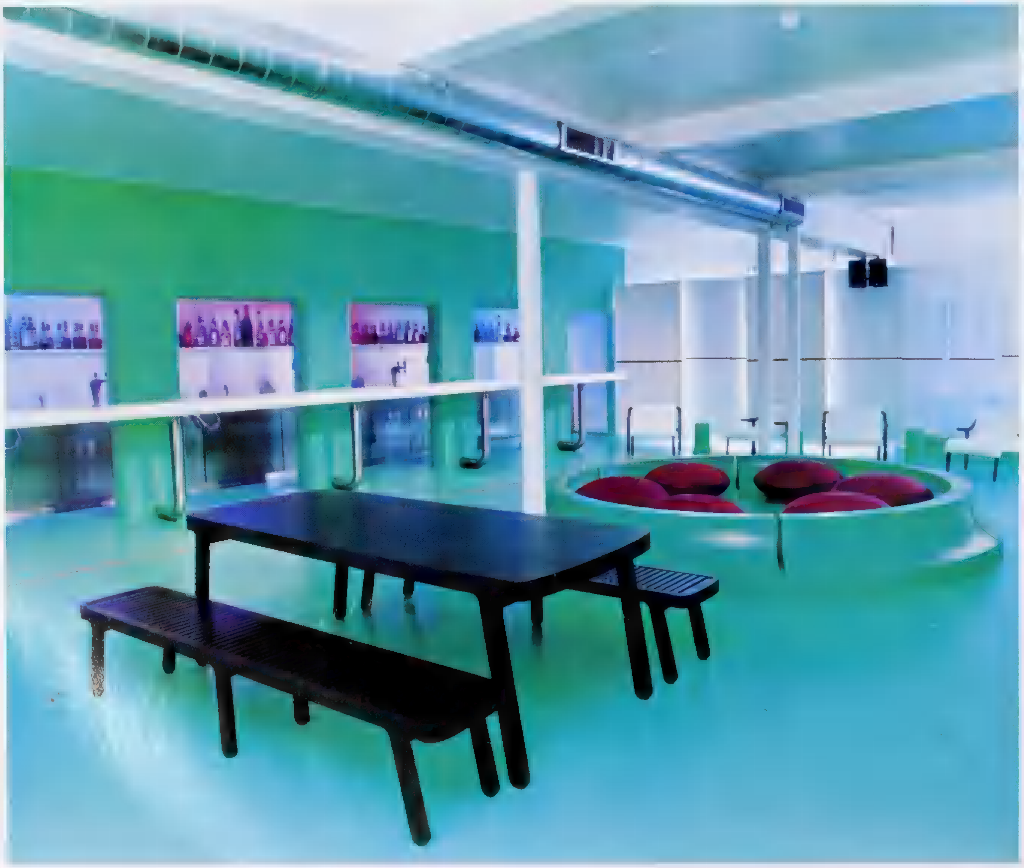
In the Red Room (left), lighting designer Jeremy Lord created walls that change color in response to the body heat of people in the space. On the main floor (below), a "swimming pool" serves as a lounging area.



CROSS SECTION

Young designed the yellow "lighting stick" and "magazine" couch in the Red Room (below left). A picnic table in the main space brings the notion of the outdoors inside (bottom).





pool" help define the look of the place. "Because it can be so cold and windy in Iceland, I thought it would be fun to bring the outdoors inside," says the designer. That explains the "swimming pool" decked out with enormous red-button cushions and the picnic table in a lounge area.

To give Astro a sleek, almost slippery, appeal, Young coated walls and floors with a resin-based compound and scattered his own sexy furniture throughout the two stories. Some of the furniture—including a "magazine" couch and chairs—exemplifies the "lounging" style that Young started honing in the mid-'90s, and most of it shows off his penchant for white.

Color, however, plays a big role in setting the mood at Astro. Lighting designer Jeremy Lord created a system for the wall behind the bar that slowly changes the color of light being emitted. Upstairs in the Red Room, where a more relaxed atmosphere holds sway, Lord designed thermo walls with lights that respond to body movements. As a result, the color here goes from a pale pink to deeper tones of red as guests become more active.

Commentary

Like many of the patrons at Astro, Young is part of a new generation of global nomads who feel equally comfortable in Tokyo, Paris, and Reykjavik. They've stayed at Philippe Starck hotels and expect every hip place to offer a new sensation, a new spin. Astro delivers the goods, but at the expense of seeming a bit glib, a tad superficial. Sipping a cosmopolitan on a giant button cushion, a guest at Astro could be anywhere in the world of cool. ■

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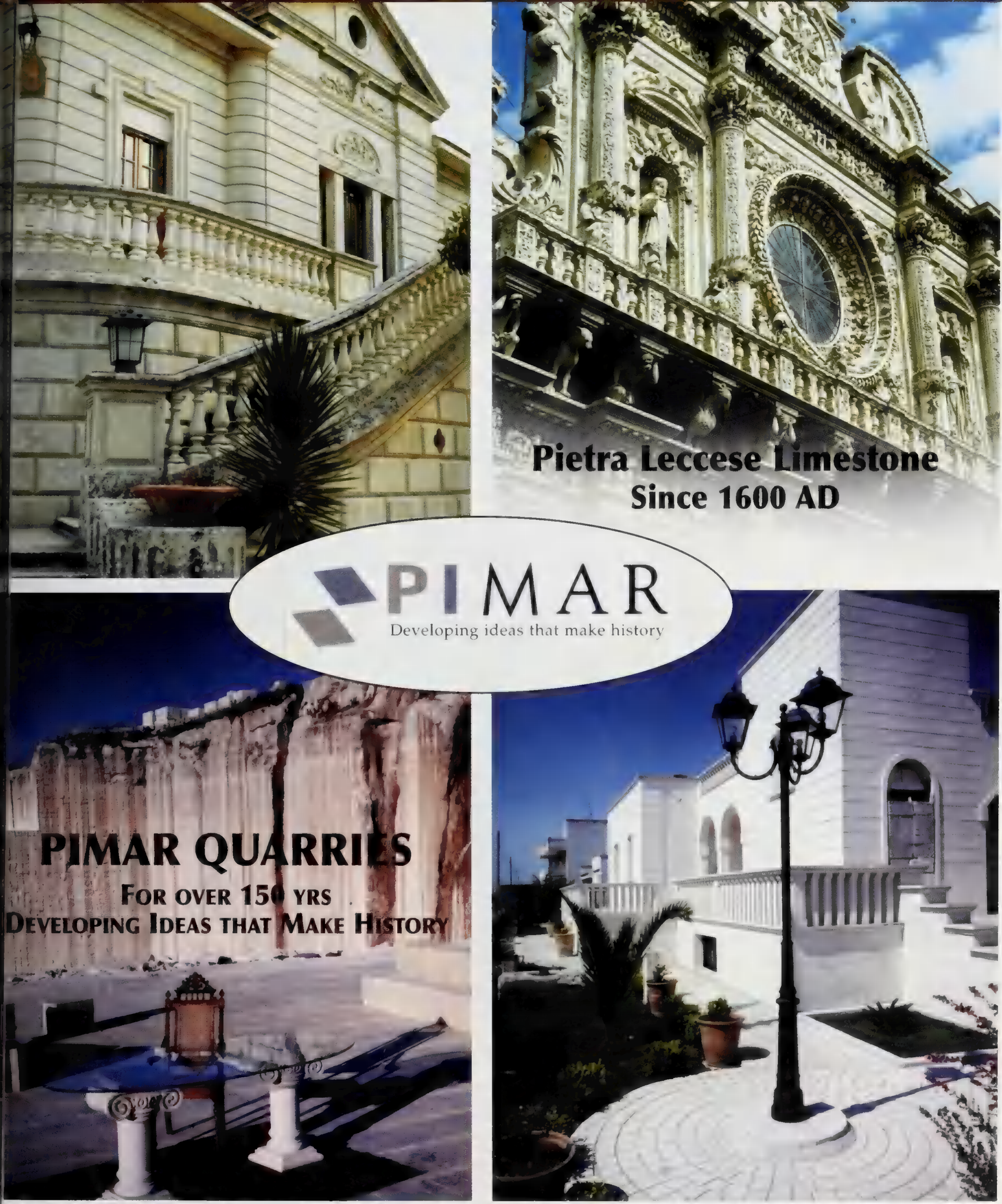

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REATION OF 3D ARCHITECTURAL MODELS IS INCREASINGLY BEING APPLIED IN SCHEMATIC DESIGN

y Michael Bordenaro

One Monday morning, Denver-based OZ Architecture sent CAD files of a resort project it was designing to a model maker. The technician fed the files into a computer-driven machine, which built up layers of elf-adhesive powder to create a 3D site model. The rchitect had his 1/200 scale model on Wednesday. his process of machine-made model making is just ne of the emerging technologies—generically alled rapid prototyping (RP)—that is gaining opularity among architects. Approximately 30 rocesses are now available and are generally classi-ed according to the methods and materials used.

Architectural model shops have long been quipped with 3-axis milling machines that can be sed for rapid prototyping. But it is the increasingly ffordable use of 3D printing and stereolithography SL) that is making rapid prototyping more appli-able to architectural design. In stereolithography, a computer-controlled laser etches models out of iquid synthetic materials, such as resins. A thin layer of the liquid synthetic is poured into a chamber. The aser etches the shape of the model into the layer by hardening the liquid on contact. More synthetic is hen introduced to the chamber and the process is repeated, fusing one ayer to the next until the model is completed.

Additional 3D modeling processes include Selective Laser Sintering (SLS), which is similar to stereolithography, but fuses powder instead of resin; and Fused Deposition Modeling (FDM), which fuses material as its deposition head passes over the model bed. But it is stereolithography and 3D printing that are currently being investigated most often by architects.

Introduced commercially in the late 1980s, the auto industry used rapid prototyping to stimulate a renaissance of affordable design and predictable manufacturing. Unlike other industries, where full-size, working prototypes are made, the architectural profession currently uses it mainly as automated model building. Observation of the physical models is used to refine CAD drawings that are, in turn, used to create and assemble mock-ups of structural sections, curtain-wall samples, and other building elements for further investigation. Eventually, rapid prototyping will be increasingly extended to automated manufacturing for architecture, as in other industries, but currently its main use in architecture is as a model-building process.

"Rapid prototyping will get to be like color plotting, which was commonly outsourced but is now an in-house process," says Charles Overy, president of architectural model builder Laser Graphics Manufacturing, in Minturn, Colorado. In a few years, architects will be able to show clients dozens of detailed schematic designs in model form, which will be far more sophisticated and accurate than the handmade models typical today.

The size of the 3D printing bed and the stereolithography cham-

Rapid prototyping allowed the designers at Morphosis to quickly produce dozens of schematic massing models for a courthouse, which could be easily plugged in to a site model for closer examination.

Michael Bordenaro is a Chicago-based business writer who focuses on architectural technology.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 200 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Explain how architects are using rapid prototyping*
2. *Describe various types of 3D computer model rapid prototyping*
3. *Discuss future improvement of 3D computer modeling for architecture*

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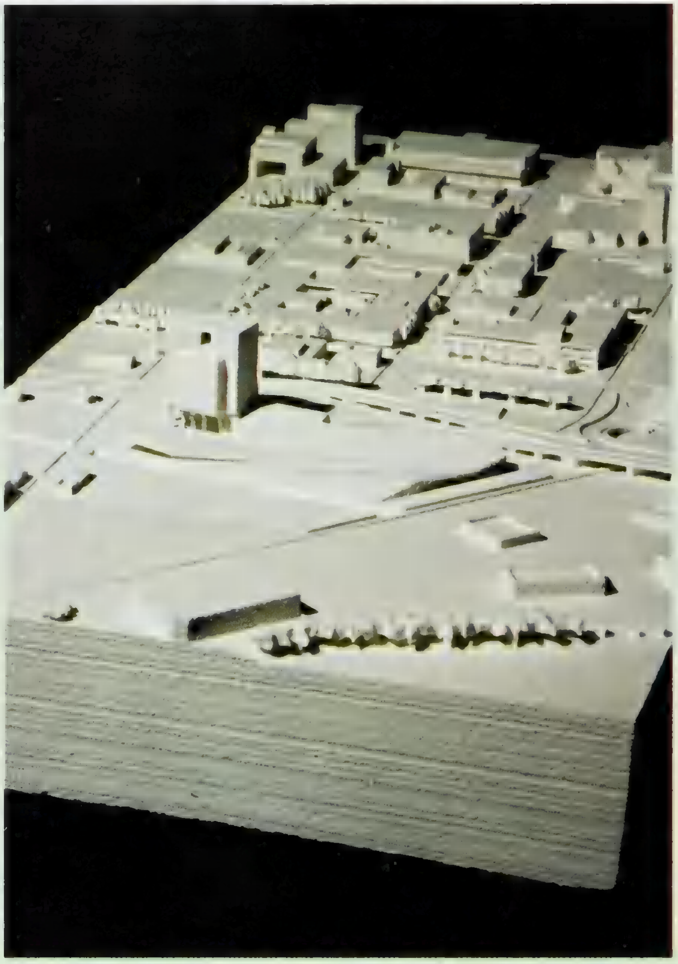
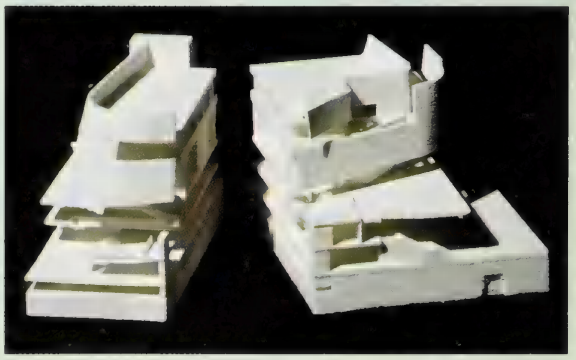


In-house capability Designers at Santa Monica–based Morphosis used its in-house 3D-printing technology and stereolithography extensively to create a site model (left) for a new courthouse commission with a complex program. Then they created a larger model of the entire building (below). They then studied one of the courtroom pods (bottom) with yet a larger model.



ber limit the size of models that can be created in one process. However, it is possible to use software to divide a building into interlocking segments. While 3D printing produces a less stable model out of powder than stereolithography does out of resin, the cost of equipment and materials is generally less. Because of price competition, 3D printers are now available for under $40,000, which is considerably less expensive than $200,00 for new stereolithography equipment ($80,000 for a refurbished machine).

> **“I BELIEVE MOST EARLY ADOPTERS WILL USE THE TECHNOLOGY TO MAKE QUICK ITERATIONS OF DESIGN CONCEPTS.”**

New York–based architect Kevin Rotheroe has been investigating rapid prototyping since the mid-1990s and teaches rapid prototyping to graduate architecture students at Harvard and the University of Illinois at Champaign. “If a building design is primarily orthogonal, it will often be difficult for even inexpensive rapid-prototyping processes to compete with interns that built models by hand,” explains Rotheroe, president of the Freeform Research Studio, in New York City. “To capture the full potential of rapid prototyping to enable creativity, you must be interested in quickly considering many conceptual design iterations than would otherwise be unreasonable. For this reason, I believe most early adopters in architecture will use the technology to make quick, tangible iterations of design concepts.”

In-house capability

Santa Monica, California–based Morphosis Architects is one of the first firms to have an in-house 3D printer, which it uses for quick production of schematic models and a variety of other uses. According to Ben Damron, a Morphosis designer who is largely responsible for operating the 3D printer, one highly effective use of the machine has been to create a context model with a space prepared for various schematic design models.

“For a GSA [General Services Administration] courthouse project that has multiple key tenants, we sent context base models to the different department heads and were able to ship them schematic building models that easily plugged in to the site,” Damron said. The firm has calculated the cost of building the models at $1 per cubic inch for all powders, sealant, and the consumables involved in making the 3D models. The plug-ins for the courthouse project were 8 cubic inches, estimates Damron. Z Corporation manufactures a printer with 8-by-8-by-10-inch

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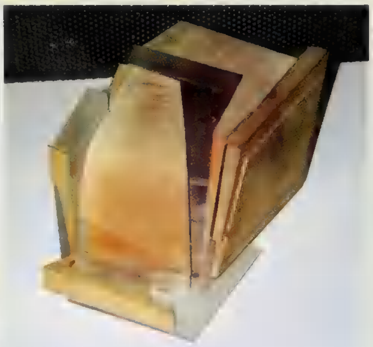

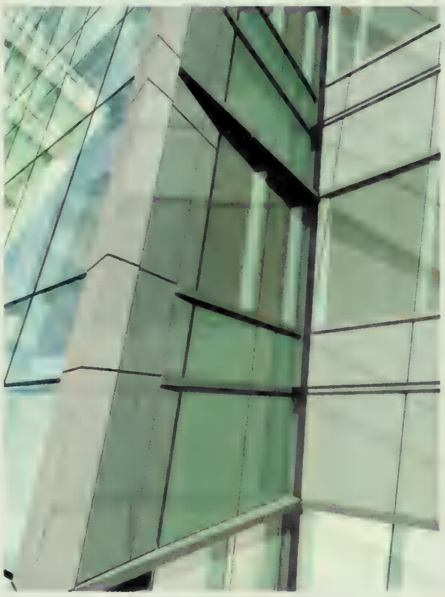

Designing in 3D
Many small maquettes (above) of NBBJ's building at 505 Union Street were created early in the design process. This one is about 3 inches by 5 inches. A 3D digitizer captured the best ideas in the maquette and fed them to the computer, which generated new computer models (center) using SGI Alias Maya software. Larger scale study models were made by hand. Finally, a full-size two-story prototype was built in Florida for wind and water testing. This model is about 25 feet tall (right).

printing-bed capability.

Jena Yoo, a principal with OZ Architecture, says that the firm also pays approximately $1 per cubic inch for materials when it outsources 3D prints. Additional charges are required for computer-file manipulation. But printing 3D models is not always a matter of money. "We don't have time to make this quality of study models or massing models in-house anymore," she says.

With the equipment in-house, Damron says that practice has made 3D printing as easy to output as traditional printing. He adds, "Because of size limitations, it can't replace all other forms of models, but [illegible] trying to convey schematic design information to the client and to the [illegible] of the team, the value is immeasurable."

> **"WE DON'T HAVE TIME TO MAKE THIS QUALITY OF STUDY MODELS OR MASSING MODELS IN-HOUSE ANYMORE."**

Yoo agrees that schematic designs are well-suited to output in 3D printing. "The color of the material, which makes the model look sugar frosted, is monochromatic, which means to us [and the client] that it is still schematic," says Yoo. The "sugar frosted" look is a result of the claylike compound used to create models. Yoo notes that the printed models are not as adaptable as paper models, which can be easily altered. Damron points out that a complication of having the equipment in-house is the amount of dust produced in the printing process. Morphosis relegated its printer to a model-building studio adjacent to its main office.

Damron adds that finishing the claylike models can become a scientific experiment that requires the right combination of sandable automotive primers and heavy paints, which the material won't absorb. For the Los Angeles County Museum of Art competition, Morphosis glued and pasted together 28 pieces—the entire site—and then sanded and painted them to appear as a seamless whole.

Yoo also notes the convenience of using the printer to make a site model and then placing schematic building models in context. An additional benefit is the ability to print a model to any scale within the limitations of the printer. Clients have requested "desktop" versions of larger site models and buildings, according to Yoo. She adds one caveat, however—the printed models do not have the color or detail refinement for use as marketing tools.

Construction assistance

For Seattle-based architect NBBJ, rapid prototyping has already contributed significantly to the construction of a complex curtain-wall system. "We have been interested in using rapid prototyping for going

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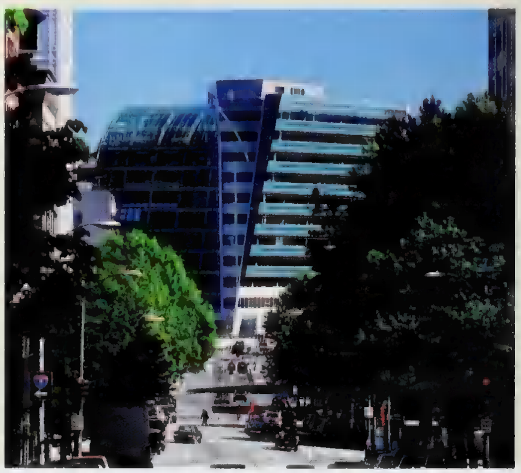

From tiny maquette to detail renderings to full-size prototype to finished product (above and right), NBBJ's Union Street building's "waterfall" curtain-wall system of multiple, sloping angles was made buildable with 3D technology. Stereolithography and other modeling devices helped the fabricators understand the complex connection details and allowed contractors to submit accurate bids.

through design iterations and understanding how components come together in a fuller manner," says Patrick Mays, AIA, a principal with NBBJ. The firm's 505 Union Street building in Seattle has exterior components sloping at multiple angles to create a curtain-wall "waterfall." Even though NBBJ has in-house milling, laser cutters, and digitizers for model building, the complexity of the curtain wall made it appropriate to use an outside vendor for the stereolithography model. "Because of the complicated connection details, we wanted to make sure we understood how the curtain wall went together," Mays says.

"WHEN WE FIRST BID THE CURTAIN WALL [WITHOUT THE MODEL], THE BIDS WERE ALL OVER THE PLACE."

In true rapid-prototyping fashion, the company built cardboard models that were digitized in-house and fed back into the computer. "We used the digital information to refine our computer models, which were then sent out to make the physical stereolithography model," Mays says. "When we first bid the curtain wall [without the model], the bids were all over the place," he continues. Then they gave the contractors access to their stereolithography model and other information and construction bids were closer in range. (The stereolithography model was even sent to the curtain-wall manufacturer to serve as a reference during the fabrication of a full-scale sample section used for wind and water penetration testing.)

Watertight models

Mays indicates that in order to ensure a proper model is made from a 3D printer or stereolithography process, a 3D computer model has to be created that has a continuous exterior surface. This is called a "watertight" model in rapid-prototyping industryspeak. Mays says that traditional architectural CAD programs, such as AutoCAD and Bentley's MicroStation, are not known for easily creating the stereolithography files that describe a series of triangles (STL) and are necessary to output 3D physical models. IronCad and ProEngineer are two programs Mays says are used by many architects and engineers to make consistent 3D computer models needed for automated model building. If a computer model is not "watertight," it is unlikely that the physical model will be structurally sound, and consequently it could collapse in the rapid-prototyping machine.

Morphosis's Damron mentions that form•Z from auto•des•sys and AutoCAD's 3D Studio Max are effective programs for creating watertight 3D computer model STL files. Rotheroe has found that although most conventional architectural software can now generate STL files at some level, the capacity of most programs to accommodate complex geometry is very limited. "My practice now primarily uses Studio Tools by

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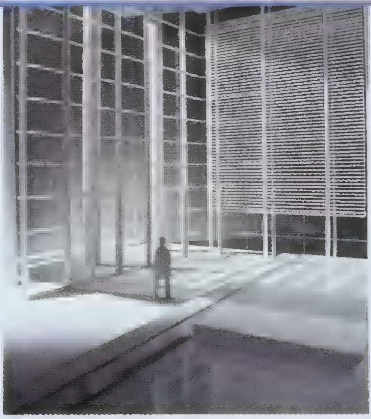

Combining in-house and out
NBBJ created an interior study model (top left) in-house for the U.S. Courthouse in Seattle from Plexiglas and cardboard. The exterior model (below left) was created by sending CAD files to a model-making firm in Canada, which produced the finished model in bass wood and Plexiglas. For the Seattle Justice Center (right), NBBJ outsourced production of the laser-cut pieces.

Alias/Wavefront and ProEngineer by Parametric Technology. Rhinoceros by Robert McNeel is also an excellent program for conceptual and schematic architectural modeling," says Rotheroe.

Laser Graphics Manufacturing's president Charles Overy says that approximately two-thirds of the time required to print a physical 3D model for architects is involved in getting the computer model properly configured. "It is difficult to bridge the data-transfer gap in architecture, because there is no other purpose for creating an STL file other than to run it on a rapid-prototype machine," he says. In order to overcome this data gap, Overy is developing a software program that will create a watertight digital "wrap" around any 3D computer model. "The program we are working on, CADSpan, will take any architectural 3D CAD file and resurface it so it can be printed on a 3D printer or a stereolithography machine," Overy explains. The software is in the pre-Beta stage and is scheduled for release in January 2003.

"COMPLEX CONFIGURATIONS BENEFIT FROM THE USE OF MORE PRECISE PROCESSES, SUCH AS STEREOLITHOGRAPHY."

Overy's plan is to allow architects to submit any type of 3D computer model via the Internet. The computer model will be run through his proprietary software and will produce an STL file that can be used to generate a 3D print or stereolithography model on any machine. The architect can use the file to create a model in-house or present it to any reproduction house that is equipped to make rapid prototypes. "The goal is to reduce the preprocessing time, volume of material, and postprocessing time," says Overy. "If you reduce these elements, then you will see 3D models that currently cost $6,000 made for under $1,000." He estimates that the cost of creating an STL file with CADSpan will be less than $175.

Rotheroe outsources various rapid-prototyping techniques to save on costs. "In order to capture the strengths of various rapid-prototyping methods, as well as to reduce the cost of models, I typically outsource components to two or three different rapid-prototyping vendors," he explains. "Complex configurations or delicate features benefit from the use of more precise processes, such as stereolithography. For model components that do not have delicate or complex features, I use concept modelers such as Z Corporation's 3D printer and then infiltrate parts with resin to make them strong." Overy also says that his model-building company will often make

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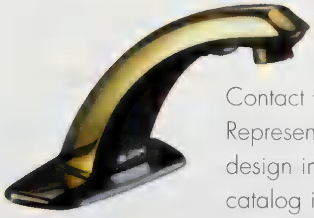

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composite models to take advantage of the most cost-effective processes.

Z Corporation makes 3D printers for creating physical prototypes from CAD drawings. The Z810 System is shown here.

Growth through universities

In his 10th annual state-of-the-industry presentation at this year's Rapid Prototyping and Manufacturing Conference in Cleveland, Terry Wohlers mentioned the architectural market for rapid prototyping for the first time. Wohlers, president of the Fort Collins, Colorado–based consulting firm Wohlers Associates, studies rapid-prototyping developments around the world. He speaks annually at the Rapid Prototyping Association of the Society of Manufacturing Engineers, which currently serves medical, packaging, tooling, transportation, toy, electronics, and a host of other industries.

The two biggest obstacles to rapid prototyping in architecture are the software used and the cost, according to Wohlers. "Architects tend to produce floor plans, details, and 2D cross sections—not solid models. This is the biggest roadblock to widespread use of rapid prototyping in architecture," Wohlers said. "The second issue is cost, which will be overcome in the next three to five years," Wohlers predicts.

In order for rapid prototyping to reach its full potential in architecture, Rotheroe says, universities will have to play a large role. "I spoke at the panel discussion on "The Future of Rapid Prototyping" in Cincinnati and emphasized that I feel RP will penetrate the architectural market from the ground up via higher education," says Rotheroe. "From my own experience teaching rapid prototyping, only 10 or so of the 126 schools of architecture in North America formally teach the subject. Recent graduates will continue to bring this knowledge into firms and this, I feel, will be the primary path by which rapid prototyping will be widely introduced to the profession," Rotheroe says.

Manufacturers realize this and are making services available to students at schools that do not have rapid-prototyping machinery in place. Two architecture graduate students had rapid-prototype models that were donated by manufacturers for their year-end design critique at the University of Illinois at Chicago last spring.

Doug Garofalo, acting director for the University of Illinois at Chicago School of Architecture, said, "Architecture firms will be hiring students specifically for their knowledge of rapid-prototyping techniques." As with many technology evolutions, this shift may be occurring more rapidly than you think. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "Designers Get More Information Earlier and Faster via Affordable Rapid-Prototyping Tools" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 280).**
- **Fill out and submit the AIA/CES education reporting form (page 280) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. The main use for rapid prototyping currently is which?
a. a model-building process
b. making mock-ups of structural sections
c. making working prototypes
d. a schematic design process

2. In a few years, schematic design models will be used in place of which?
a. structural section mock-ups
b. schematic drawing presentations
c. construction drawings
d. shop drawings

3. What is the reason rapid prototyping is just now being used in architectural design?
a. hand model building is no longer available
b. 3D printing has recently become available
c. 3D CAD has recently come into widespread use
d. 3D printing has recently become affordable

4. Stereolithography uses which material to make models?
a. fused powder
b. liquid resin
c. fused deposition
d. solid synthetic

5. According to Rotheroe, rapid prototyping is best used for which application?
a. orthogonal designs
b. complex designs
c. accommodating changes in design
d. reiterations of the design concept

6. The advantage of having a 3D printer in-house is which?
a. cost
b. time
c. convenience
d. cleaning

7. What is meant by the term "watertight" model?
a. made of a material impervious to water
b. made without joints, seamless
c. made with a continuous exterior surface
d. made from a series of triangles

8. Why does a computer model need to be watertight?
a. to prevent collapse in the rapid-prototyping machine
b. to look for weak joints
c. to handle the paints and epoxy
d. to handle the laser graphics

9. The major time consumer of printing a 3D model is which?
a. uploading the program on the Internet
b. running the STL file
c. configuring the computer model
d. laser printing of the model

10. Overy's software will do all except which?
a. take any type of 3D computer model via the Internet
b. run the computer model through his proprietary software
c. produce an STL file
d. print the rapid prototypes

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In tough times, maintain a technical edge

Alan Joch

r Rob Fortin, today's downtrodden conomy sometimes has an upside. director of IT for Arrowstreet, a 0-person architectural firm in merville, Massachusetts, Fortin ovides the design staff with neces-ry technology tools while trying to ep costs under control. That job t a little easier when Fortin bought o high-end servers late in the mmer and found their prices were gnificantly lower than what he had dgeted for last January. "We saw a percent savings that was due just the state of the economy," he says.

Fortin isn't alone. Technology ficers at other architectural ms are also finding ways to take dvantage of a slow economy. The ey, they say, is to resist attempts slash IT budgets and use these esources to prepare for better mes. "In a down economy, we do ave to tighten our belts," says Jill othenberg, AIA, chief technology fficer at ADD in Cambridge, assachusetts, which specializes in orporate architecture and multi-unit esidential projects. "Nevertheless, his is a time to keep putting money nto technology, as well as the eople to support it, so you can ontinue to develop."

utsourcing strategies

Moving forward means different things to different IT managers. Rather than maintaining a business-as-usual approach, some firms are now overhauling their IT infrastructure to make it more efficient.

One such company is Manhattan-based Davis Brody Bond, where a bare-bones, three-person IT staff serves a 100-person design firm. Paul Seletsky, AIA, director of technology, is aggressively moving to off-load as many of the firm's technology services as possible, including the phone and e-mail systems, to third-party outsourcers. "My philosophy is that the company should focus on its core competency—design—and not make the IT department the tail that's wagging the dog."

Seletsky believes that most firms, in both good economic times and bad, have trouble providing a complete range of IT needs with an in-house staff. Instead of fighting for more people, Seletsky is opting to stay small and tap outside expertise. "I wouldn't build an electrical system to provide the firm with power, so why should I even attempt to do that with the phone or e-mail systems?" he reasons.

Part of Seletsky's vision was shaped in 1993, when he worked in the World Trade Center. He saw firsthand how the bombing that year disrupted IT infrastructures. "I experienced what business continuity really means," he says. One of the advantages of outsourcing is that a large portion of critical technology and company data reside off-site, protected from internal problems or disasters.

Outsourcing is also saving the firm money. Seletsky pays a Manhattan-based e-mail service, MI8 Corporation, $20 per person per month to deliver the resource. He estimates this arrangement is saving him about $1,000 a month compared to managing e-mail in-house, which would require one person dedicated to the job.

Similar savings are accruing from outsourcing the phone system to M5 Networks, of New York City. M5 provides a new type of telecommunications platform called IP telephony that sends voice traffic over the Internet rather than long-distance telephone lines. Because each call is billed only as a local charge to the firm's Internet service provider, the system is saving the company about $2,000 a month that they'd otherwise pay in long-distance charges. In addition, the silicon brains of the new phone system reside at M5's headquarters, fulfilling Seletsky's goal of protecting key technology in a remote location. "If a fire broke out in our office, I could redirect incoming calls to the home phones of employees," he says, adding that calls and voice

At Davis Brody Bond, Paul Seletsky, AIA, has invested in IT despite the recession. A new IP telephony system lets staff manage calls through their PCs.

Alan Joch is a technology and business writer based in New England. Contact him at ajoch@monad.net.

www For more information on technology for architects, including reviews, vendor lists, and links, go to Digital Architect at **architecturalrecord.com**.

mail would be lost if the old, in-house phone system were damaged.

The company is even outsourcing some of the specialized tools of the design trade. ABC Imaging, based in Washington, D.C., now installs and maintains all of the firm's printing and plotting equipment. "We have color plotters, high-end black-and-white production plotters, and three new multifunction printers, which we can swap out [with new equipment] as our needs change," Seletsky says. He estimates the firm saves between $4,000 and $5,000 a month by using a service contract versus buying and maintaining the same equipment. An on-site manager from ABC keeps all the printers and plotters supplied with toner cartridges, paper, and other consumables. "He provides better service than I could expect from an employee," says Seletsky.

Finally, leasing rather than buying PCs shields the firm from IT obsolescence. All of the computers at Davis Brody Bond are part of a three-year lease agreement with Dell Computers. The arrangement allows the firm to standardize on a common platform, which reduces networking and application software conflicts. "You don't save money by leasing, but it makes us better able to manage expenses," Seletsky says. "We understand the costs better each month, compared to buying equipment in bits and pieces."

Another firm that has seen the benefits of outsourcing is The Office of Michael Rosenfeld (OMR), of West Acton, Massachusetts, a 42-person residential, commercial, and municipal architecture firm. Paul Woyda, AIA, the firm's IT manager, is the sole person dedicated to the company's IT needs. To help him provide necessary services, he outsources LAN and telecommunications services. The firm has also recently hired financial software vendor Intuit to provide secure, Web-based database services using a product called QuickBase. "Our focus is the real-time sharing and tracking of construction administration information," Woyda says. Currently, the company is using QuickBase in a $73.9 million high school project under construction for two Massachusetts towns. All modifications to construction documents, meeting reports, submission status, and construction progress photography are available via the Web at any time to authorized people, including the client and contractors. "The result is significant time and cost savings for the project owner and all project participants," Woyda says.

But not everybody embraces outsourcing. Arrowstreet's Fortin takes comfort in having in-house experts who can tackle problems as they arise, rather than relying on service technicians who juggle the needs of numerous customers. He's devoting more time to staff training and what he describes as a move toward greater self-sufficiency. "We're giving our network administrator all the training he can get," Fortin says. "The need for people to have the best possible tools is more important than ever." And one of the key advantages of outsourcing—the storage of critical information off-site—also makes firms vulnerable to unexpected downtime, system crashes, or other problems experienced by the companies they do business with.

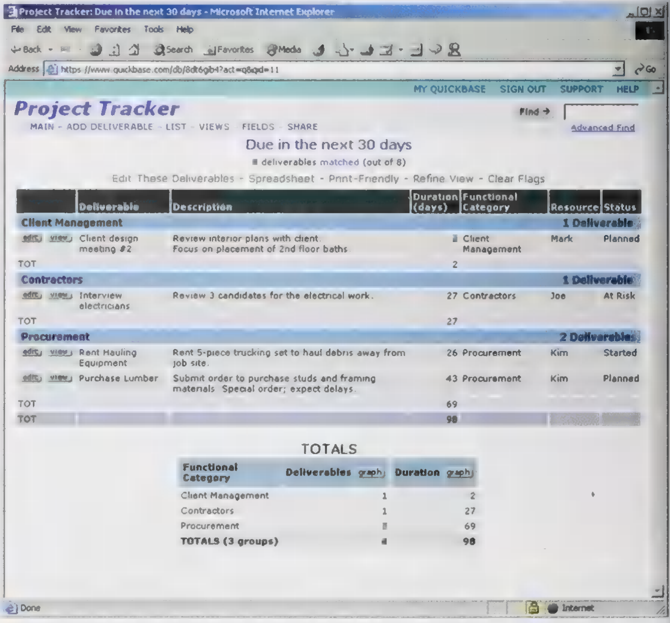
Selective do-it-yourself

With a relatively large IT staff of eight, ADD has traditionally followed a do-it-yourself approach, choosing to let in-house talent manage technology tools. But that stance has become less rigid in the past year as the firm began to consolidate disparate data sources, including separate human resources and financial databases, into a central system with reduced redundancy and fewer opportunities for errors. "A year ago, we saw some applications coming onto the market that would allow us to bring our data together under one umbrella," Rothenberg says.

Committing to a new off-the-shelf product called Deltek Vision for practice management represented a break from the past, when the IT staff would develop software in-house to enhance its various databases. Although this gave the firm exactly the capabilities its staff needed, there was an expensive downside. "When you develop [software] internally, it can become a never-ending process. Everyone wants this or that tweak," Rothenberg says. "When you get a shrink-wrapped package, that can end those discussions."

Rothenberg's new philosophy is to devote IT resources to developing programs that aren't available commercially, while buying off-the-shelf yet customizable solutions whenever possible. "Why reinvent the wheel?" she says. The firm is currently using its in-house staff to expand its intranet beyond being a clearinghouse for company news and policies—it's now becoming a resource for the design process itself, with archives of model templates and project documentation.

ADD will also use the months ahead to catch its breath. The pace of technological innovation has slowed compared to the constant stream of new hardware and software that characterized the past decade, and IT departments have barely time to install an application and learn its features before the next release hits the market. In addition to constantly shuffling installation disks, Rothenberg's staff felt they rarely mastered an application's capabilities in depth, she says. Today, her staff spend more time fully evaluating new technologies, like the parametric modeling program Revit from Autodesk, or revisiting existing programs. "We can now look at our current infrastructure and see how we might get more out of it," she says. "We're looking for unused features within [Microsoft] Outlook or [Bentley Systems] Microstation that we can now use to our advantage."


Project Tracker: Due in the next 30 days - Microsoft Internet Explorer
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Go
MY QUICKBASE SIGN OUT SUPPORT HELP
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Project Tracker

MAIN - ADD DELIVERABLE - LIST - VIEWS - FIELDS - SHARE

Due in the next 30 days

[illegible] deliverables matched (out of 8)

Edit These Deliverables - Spreadsheet - Print-Friendly - Refine View - Clear Flags

	Deliverable	Description	Duration (days)	Functional Category	Resource	Status
Client Management						**1 Deliverable**
edit view	Client design meeting #2	Review interior plans with client. Focus on placement of 2nd floor baths.	[illegible]	Client Management	Mark	Planned
TOT			2			
Contractors						**1 Deliverable**
edit view	Interview electricians	Review 3 candidates for the electrical work.	27	Contractors	Joe	At Risk
TOT			27			
Procurement						**2 Deliverables**
edit view	Rent Hauling Equipment	Rent 5-piece trucking set to haul debris away from job site.	26	Procurement	Kim	Started
edit view	Purchase Lumber	Submit order to purchase studs and framing materials. Special order; expect delays.	43	Procurement	Kim	Planned
TOT			69			
TOT			98			

TOTALS

Functional Category	Deliverables graph	Duration graph
Client Management	1	2
Contractors	1	27
Procurement	[illegible]	69
TOTALS (3 groups)	[illegible]	**98**

Intuit's QuickBase helps OMR manage and share information on the progress of a school construction project with the client and contractors.

Stay strong

IT managers say the biggest lesson today is to stay focused on the goal of using technology to boost productivity. "Don't let management try to stop computer purchases to save costs," Fortin maintains. "That just gives you frustrated architects who don't have the tools they need to take on a fast-turnaround project. It's more important than ever to maintain your technical edge." ■

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Bozeman, Montana
Photo courtesy Pozzi Wood Windows®

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SENTS

Window Walls:
Bringing the World Into Your Living Room

Th client of Bozeman, Mont., studio head Bayliss Ward, AIA, was a nine-time Pr ssional Golfers' Association winner and former U.S. Open champ who n d from Phoenix to Bozeman, Mont., his wife's childhood home. The client chose as a home site a 20-acre parcel of land atop a knoll, with a panoramic view of the Gallatin Valley and the distant Bridger Range.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

U he learning objectives below to focus your st as you read Window Walls: **Bringing the W ld Into Your Living Room**. To earn one A CES Learning Unit including one hour of h safety welfare credit, answer the questions o age 207, then follow the reporting in uctions on page 278 or go to the Continuing E cation section on *www.architecturalrecord.com* follow the reporting instructions.

L rning Objectives

- derstanding the variables, including some the structural issues, associated with creating vindow walls."
- visioning stacking and grouping traditionally dependent windows to create energy efficient ew walls.
- ploring how exposure issues affect your selection glass.

"There is little in the way of artwork in this guy's life. The site becomes the artwork, and we worked with different window sizes to frame the views," says Ward, head of 14-member Bayliss Architects.

Eighteen-foot vaulted ceilings provide the "canvas," if you will, and a 14-ft.-wide centerpiece window wall, an unusual combination of traditional window types, sizes and shapes, completes the breath-taking effect.

Through computer-aided design and automated manufacturing, window manufacturers now offer a vast selection of window types, styles and sizes at affordable prices. Designers have been quick to adopt the new products to create dramatic visual effects, and at the same time provide comfort with relative energy efficiency.

Residential window walls combine window shapes and styles typically not seen in combination. The ability to mix and match, and the ability of manufacturers to fill almost any architectural need, creates unprecedented design opportunities.

In lieu of custom windows, in the Bozeman home, Ward—aside from a nearly 10-ft. high central picture window—opted for standard windows in standard sizes, then combined them to create an unusual effect. "Ninety percent of the work we do starts with standard, off-the-shelf units," says Ward. "I've never been unhappy with what we can get out of the book."

In grouping units to create window walls, there are a number of critical considerations, including load factors, mullion support systems and the effects of exposure. This continuing education section will explore the process of creating window walls and discuss some of the factors designers must take into account when creating view walls.

Bayliss' Bozeman project is instructive because it is built under seismic codes (Zone 3), at a latitude where tremendous snow loads are commonplace, and where wind loads can be critical. There were other lessons learned in Bozeman, and they apply to all climates: heat gain was greater than expected and demanded attention three years after the client moved into the home. We'll get back to that in a moment, let's first look at some of the structural issues.

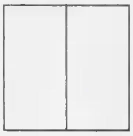
Panoramic window wall combinations are likely to include these window types:

- ***Casement windows*** lend an air of elegance; they also deliver the most unobstructed viewing areas, the greatest structural integrity and ventilation of all operating windows. Certified casement windows offer superior thermal performance. Use them as a foundation for a grouping of windows, and you can dream up a multitude of designs that include complementary or contrasting window types.
- ***Awning windows*** are versatile, and compatible with a variety of architectural styles. They're especially pleasing when combined with other windows, large or small. You can achieve a flexible range of ventilation, and operators let you set openings at fractions of full venting, while allowing windows to close securely without shaking or rattling.
- ***Fixed or operating geometric windows*** are a distinctive alternative to more commonly expected designs. They let you emphasize a home's architecture or your own particular style. Use a custom-designed window, or a standard geometric window to add the ambiance you're after.

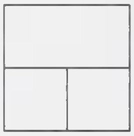
Casements, awnings and geometric windows can be combined in a virtually unlimited number of ways. Manufacturers' catalogs, despite their apparent breadth, suggest only some of the possibilities. Combining windows to create a window wall, however, creates some specific support problems of which designers must be wary.

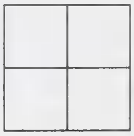
There are three basic types of joined window combinations:

- combinations of ribbons or stacks.
- combinations with T-corner intersections.
- combinations with four-corner intersections.


Ribbon

Stack


T-corner intersection


4-corner intersection

Generally speaking, joined casements, awnings and spandrels supported on all sides by the building structure are the most stable, since all four corners of each individual unit are firmly anchored into the wall opening. Such is the case with ribbon and stack combinations.

T-corner intersections and four-corner intersections, however, will require load-resistant mullions sufficient to withstand wind loads. Two rules of physics determine the design pressure capability (DP) of mullions:

- wind load, measured in pounds per square feet (psf) increases as the surface area of the combination increases.
- wind load capacity of the mullion decreases as its span increases.

The design pressure rating diminishes as the area of the windows and/or the span of the mullion increases. Note that, in the case of ribbons and stacks, the design capability does not begin to fall off until the dimensions of the adjacent window units exceed roughly five feet—or the mullion length exceeds six feet (we try hard not to exceed 50 square feet, and in high-load areas even that number will decrease, says the technical manager for one manufacturer. It is heavily dependent upon the configuration. For example, a window three feet wide by 12 feet tall will perform much differently than a window six-feet-by-six feet, though the square footage is the same).

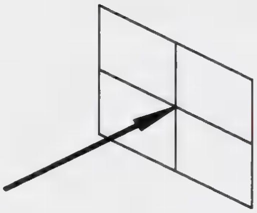
"Most states requiring DP ratings will call out ratings up to a given roof height (generally 33 feet) regardless of the size of the fenestration," says one industry source.

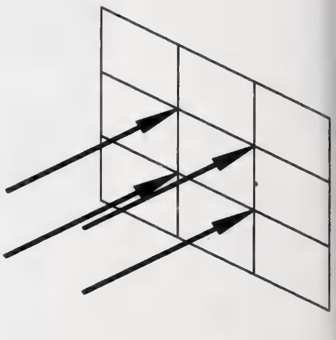
"Florida requires that DP ratings be determined by the architect or engineer of record based upon the size and location of the structure, according to ASCE 7-98. This means that every home has to be engineered."

The new codes have created considerable confusion. A single-story home next to a two-story home, for instance, will have a different DP requirement for the same size opening. "When it comes to the size of the opening, a factor called tributary area is applied. The result is that a 3-0 x 5-0 may need to be DP-50, while a larger window or door, say an 8-4 x 8-0, may only need to be DP 45—or the same side of houses."

In the case of T-corner intersections or four-corner intersections, the windows are especially susceptible to lateral loads, such as wind, because not all of the units are fastened to the building structure on their opposing sides. A combination with a T-corner intersection offers some resistance to wind load since a continuous jamb spans and supports the intersection. A combination with a four-corner intersection, however, is particularly susceptible to wind load and may deflect at the intersection. If the deflection is severe enough, it may compromise the integrity of windows joined at the four-corner intersection.

As shown below, the more four-corner intersections that occur in a combination, the more susceptible the configuration is to deflection.





Generally speaking, two types of mullion support systems are available to resist wind loads at these four-corner intersections:

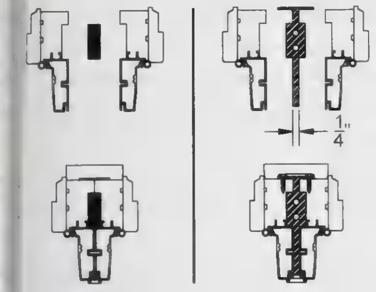
- wood mullion stiffeners (for smaller combinations and lighter lateral loads).
- metal mullion reinforcement (for larger combinations and heavier lateral loads).

Manufacturers will generally supply mullion stiffeners to all factory-assembled casement/awning combinations unless metal mullion reinforcements are specifically requested.

It should be noted that mullion reinforcements may add to the overall unit dimension as shown in the illustration below. For instance, the manufacturer's mullion reinforcement in this illustration requires the rough opening to be increased by $^1/4$" for every mullion requiring reinforcement.

For greatest strength, both mullion stiffeners and reinforcements should span the shortest distance, either vertically or horizontally, as shown in the illustrations on page 205.

Note that wood mullion stiffeners are not recommended for spans of over six feet. Longer spans require either metal mullion reinforcement or lateral support elements within the building structure, such as studs or columns.



Mullion Stiffener *Mullion Reinforcement*

Klamath Falls, Oregon *Photo courtesy Willmar® windows*

e wall area of the 6,600 sq. ft. Bozeman home (the ent spends much of his time in the separate 3,600 ft. "barn," complete with indoor driving range, tting green and kitchen) is 7,570 sq ft.—nearly 00 of it glazed. "One of the pitfalls in using so ich glass," says Ward, "is that you take away your ear in the building."

Ward relied on moment frames and "a lot" of hold-wns, both at the bottom plate and at mid-wall to mpensate for the lack of shear. Two 3.5-ft-deep box ams carry the roof load, the roof ridge is in a near-ntilevered condition, and Ward relied on steel where cessary for reinforcement. Corners are plywood shear nels inside and out.

The largest of the panes—the central picture window—is 9 x 6, mulled to out 10 feet. Overall, the window wall is 14 ft. wide and 16 feet from the top the sill to the top of radiused transoms. Casements, in combination, bring fresh air. Simulated divided lites allowed Ward to reduce the scale of the uth window wall. "We used simulated divided lites because we wanted an uminum-clad exterior and a wood interior," he says. "But it is difficult to tell a glance that they are not true divided lites."

To meet egress requirements in bedrooms, Ward used casements in concert ith double-hung windows, again using a simulated divided lite with 1 1/2-in. orizontal members and 3/4-in verticals. "The horizontals are at a height to atch the double-hungs. The 1 1/2-in. horizontal elements look like the check ail on the double-hungs."

Ward chose low-E glass for north and east exposures, but the client eschewed inted glass for the window wall because they found the tint disconcerting.

"That has come back to bite us," Ward says. Despite three-and-a-half-foot verhangs around the house, the heat gain from the southern window wall is ccasionally uncomfortable. "We've gone back and are now installing a etractable shutter device to control the heat gain—and we added air onditioning, although that is a rarity where we are located."

Accommodating Loads on the Windows

Windows are designed to support their own internal weight. When downward vertical loads are transferred to the head of the window frame, deflection will occur and loads can inadvertently be transferred to sashes, or worse, the glass itself. These load transfers will affect ease of operation or induce stresses on the glazing unit. Therefore, vertical loads above the head of a window frame must be transferred to a lintel or other structural system that limits deflection to an acceptable amount. The deflection must be accommodated when calculating the joint width between the head of the window frame and the lintel above.

To limit vertical load transfer between lintel and frame head, the seal at the top of the window must be compressible using very little force. This is done by using an elastic sealant with a low modulus of elasticity. The window anchor points should allow vertical movement of the window frame head, while minimizing the vertical load component being transferred to the frame.

Window anchorage systems must transfer substantial wind loads (positive and negative) to the adjacent wall, accommodate structural deformations such as creep, and allow for thermal expansion between materials. As window units get larger the design of anchorage systems become more critical.

To restrict the displacement of the window versus the wall, several anchor points are required to prevent vertical displacement, to accommodate wind loads and to account for thermal expansion and contraction.

Designers must accommodate a variety of loading conditions on windows with full awareness of dimensional inaccuracies introduced by site construction techniques. Rough opening dimensions may vary from working drawings and are often out of square. Vertical loads that could be introduced by building creep in the first few years after construction must be accommodated. Anchorage systems must transfer wind loads to the wall structure, yet allow differential expansion between the window and wall.

Divided Lites: Accent Your Design

A key to personalizing the window wall is designer divided lites, which give the window the appearance of having individual panes without sacrificing the energy efficiency of insulating glass.

The look of authentic divided lites can be achieved by permanently attaching wood or metal-clad muntins to the glass—inside and out. Spacer bars between the muntins give windows the look of true divided lites. Exterior

Chesterfield, Missouri. *Photo courtesy Norco® wood windows and patio doors*

bars can be constructed of either wood or extruded aluminum, and to increase the sense of authenticity, champagne-colored internal aluminum shadow bars are available in varying widths and profiles.

There are a number of divided lite choices to consider:

- simulated divided lites, with or without internal shadow bars, are available for windows with either wood or clad exteriors in a number of widths and profiles and provide an authentic divided lite look.
- full-surround wood grilles, which fit securely into the window interior, are an economical way to simulate the look of divided lites.
- between-the-glass muntins require no maintenance and are available in either flat or profiled bars.

Wind Load Data

ASTM International (formerly the American Society for Testing and Materials) has established wind load standards. In 1989, ASTM established standard E1300-89 "Standard Practice for Determining the Minimum Thickness of Annealed Glass to Resist a Specified Load." ASTM has subsequently proposed criteria for other glass types: heat-strengthened, tempered and insulating glass are referenced in ASTM E1300-98 and E1300-02.

Considering Exposure

As Ward learned in the Bozeman project, the many advantages of natural sunlight, especially solar radiation in winter, can be diminished by the discomfort of summertime heat gain.

Heat transfer across the cavity of insulating glass units occurs through two separate mechanisms: thermal radiation from glass surface to glass surface, and conduction through molecules of air. In a two-pane clear window unit, over 60 percent of the total heat transfer is by thermal radiation.

In winter, when heat loss is the overriding issue, incorporating a low emissivity (low-E) coating on one surface facing the airspace blocks enough radiation transfer to reduce the total heat loss from 34 to 22 Btu/hr/ft². By adding a low-E coating, heat loss by thermal radiation is reduced to only 14 percent of total heat transfer.

Heat loss in winter can be further reduced by filling the airspace with an inert gas, in most cases argon (the conductivity of argon is 30 percent lower than that of air). But at high altitudes, gas-filled insulating units may be impractical. The air in the sealed cavity of a double glazed unit expands as the unit is raised in altitude due to the change in the atmospheric pressure. This expansion results in stress on the glass which can cause the glass to break. To allow the air pressure in the cavity to acclimate to the change in altitude, a breather tube (or capillary tube) is installed so that air can escape during transit. If argon gas were included, this tube would allow the argon gas to escape, which would greatly depreciate the thermal performance of the unit. Ward notes, for instance, that argon-filled insulating glass was considered, ther dismissed, because of the likelihood of damage to the units that would occur i shipping due to changes in altitude.

In summer, heat gain occurs both as a result of direct transmission of solar radiation and air-to-air heat gain from high outdoor temperatures. Low-E unit can reduce summertime heat gain by nearly 50 percent.

How to Select an Energy Efficient Window?

The website www.efficientwindows.org provides a good guide to selecting energy efficient windows: plug in the geographic location of the building site and you get a list of window types, coatings and a bar-chart illustrating the annual energy savings associated with each. It will give you U-factors, solar hea gain coefficient (SHGC) and visible transmission (VT) numbers for a range of recommended window types.

The National Fenestration Rating Council (NFRC) has developed a window energy rating system based on product performance. The label that appears on all NFRC certified windows allows direct energy property comparisons. You've been through this drill before, but let's review. Here are some of the terms you will need to be familiar with when specifying windows:

- ***Solar Heat Gain Coefficient:*** The fraction of solar radiation entering a home through the windows. The lower the number the better the window i at preventing solar gain-critical to reducing summer cooling costs.
- ***Shading Coefficient:*** The ratio of solar heat gain through a glazing to the solar heat gain through a single lite of 1/8" glass. The smaller the number, the better the glazing is at preventing solar gain.
- ***Relative Heat Gain:*** The total amount of heat gain through a glazing system expressed in terms of Btu/hr/ft².
- ***U-Factor:*** The amount of heat transmitted by the window. The lower the number, the more efficient the window is in resisting the transfer of heat, thus reducing winter heating costs. Look for windows with a low U-factor. A U-factor of 0.35 or lower is considered very good by the EnergyStar program.
- ***Visible Light Transmittance:*** In the visible spectrum, the percentage of light that is transmitted through the glazing.
- ***Visible Light Reflectance:*** In the visible spectrum, the percentage of light that is reflected from the glass surface(s).
- ***Solar Energy Transmittance:*** In the solar spectrum, the percentage of ultraviolet, visible, and near infrared energy from the sun that is transmitted through the glazing.
- ***Solar Energy Reflectance:*** In the solar spectrum, the percentage of ultraviolet, visible, and near infrared energy that is reflected from the glazing surface(s).
- ***Emissivity:*** A measure of a surface's ability to emit long-wave infrared radiation or room temperature radiant heat energy. The lower the emissivity, the lower the resultant U-value.

As a rule, in northern climates select windows with a U-factor of 0.35 or less. Some windows with double-pane insulating glass, low-E coating and inert gas have a U-factor below .30. Some windows with triple-pane insulating glass, low-E coating and inert gas have values below .20.

In southern climates, the solar heat gain coefficient is the critical factor. Look for windows with a solar heat gain coefficient less than 0.40.

Click for Additional Information

As part of this CES learning activity, you are required to read some additional material. Some of the test questions below will relate to the additional reading material. Go to www.architecturalrecord.com/CONTEDUC/ConteducC.asp to access the material online. To request a faxed copy of the material, please send an email to joycer@jeld-wen.com.

Learning Objectives

- understanding the variables, including some of the structural issues, associated with creating "window walls."
- envisioning stacking and grouping traditionally independent windows to create energy efficient view walls.
- exploring how exposure issues affect your selection of glass.

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 278. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Which of the following is a basic type of joined window combination:
A: a. Combinations of ribbons or stacks.
b. Combinations with T-corner intersections.
c. Combinations with four-corner intersections.
d. All of the above

Q: 2. T-corner intersections and four-corner intersections will require load-resistant mullions sufficient to withstand wind loads.
A: a. True
b. False

Q: 3. Which type of mullion support systems available to resist wind loads at these four-corner intersections is best for larger combinations and heavier lateral loads:
A: a. wood mullion stiffeners
b. metal mullion reinforcement

Q: 4. Mullion reinforcements will ____ to the separation between units.
A: a. add to
b. subtract from

Q: 5. Window anchorage systems must:
A: a. Transfer substantial wind loads to the adjacent wall
b. Accommodate structural deformations such as creep,
d. Allow for thermal expansion between materials.
d. All of the above

Q: 6. In a two-pane clear window unit, over ___ percent of the total heat transfer is by thermal radiation.
A: a. 30
b. 40
c. 50
d. 60

Q: 7. Incorporating _____ on one surface of glass, heat loss by thermal radiation is reduced.
A: a. low emissivity (low-E) coating
b. breather tube
c. clear glazing
d. tinted glazing

Q: 8. As a rule, in northern climates select windows with a U-factor of:
A: a. 0.35 or less
b. 0.35 or more

Q: 9. According to the Lawrence Berkeley National Laboratory, double pane windows tinted on one glass surface will reduce the level of discomfort by about what percentage?
A: a. 20 percent
b. 34 percent
c. 18 percent
d. more than 50 percent

Q: 10. Wind load, measured in pounds per square feet (psf) increases as the surface area of the combination increases.
A: a. True
b. False

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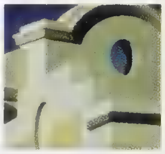

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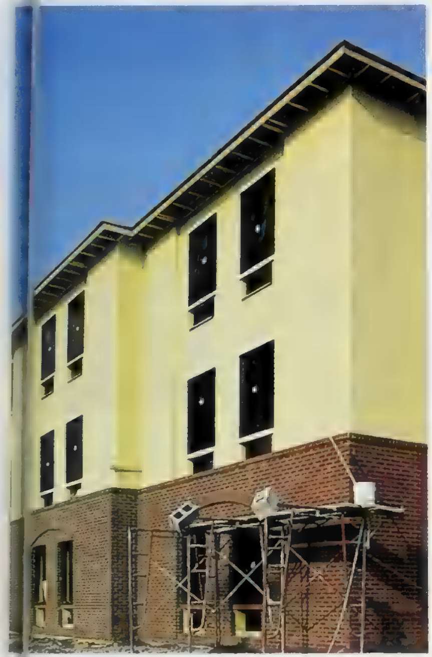
TO CORP. PRESENTS

Fluid Applied Air/Moisture Barriers for Moisture Control and Mold Prevention in Wall Construction



Fluid applied air/moisture barriers are effective and economical means of controlling moisture in wall assemblies. Moisture control assists in preventing mold growth in wall assemblies. Fluid applied air/moisture barriers also offer performance advantages over building wraps and traditional asphalt impregnated felt or paper moisture barriers. They can be used in all types of wall construction over wood, gypsum and cement based sheathings. They can also be used over prepared concrete and concrete masonry units. They generally consist of three components (*Figures 1a and 1b on page 210*):

1. A trowel applied *joint treatment* for filling sheathing joints, spotting fasteners, and protection of rough openings, corners and other changes of plane in sheathed wall construction.
2. A *reinforcing* mesh or tape used in conjunction with the joint treatment to reinforce sheathing joints, corners, and changes of plane, and for repair of minor cracks in concrete or concrete masonry wall construction.
3. A *waterproof coating* applied by trowel, spray, roller or brush to prepared sheathing, concrete or concrete masonry wall surfaces.

When properly applied to sound supporting construction, these components function together as an air barrier and seamless moisture barrier in the wall assembly. Some of the advantages of a fluid applied air/moisture barrier include:

Effectively blocks air leakage	Increases occupant comfort, Reduces energy costs by reducing heating and cooling loads, Reduces risk of condensation caused by air leaks through the wall construction
Seamless moisture barrier	No tears, holes, or lap joints that can compromise performance in service, Reduces risk of installation errors
Protects sheathing and rough openings from weather damage during and after construction	Minimizes risk of weather damage to sheathing and associated repair or replacement costs
Simple installation procedures	No special tools or skills required, reduces labor costs
Durable	Does not tear or lose its effectiveness with exposure to weather during construction or while in service
Structural/fully adhered	Rigid and stable under air pressure loads, does not tear or blow off the wall with wind
Distinct color	Facilitates job site inspection and quality control
Water based	Safe to use, easy clean-up, VOC compliant
Provides opportunity for pressure equalized or pressure moderated wall design	Minimizes risk of rain water penetration through wall assembly
Doubles as air barrier and moisture barrier in wall assembly	Efficient use of materials

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

he learning objectives below to focus your r as you read **Fluid Applied Air/Moisture riers for Moisture Control and Mold vention in Wall Construction**. To earn AIA/CES Learning Unit including one hour of h safety welfare credit, answer the questions age 213, then follow the reporting instructions age 278 or go to the Continuing Education on on *www.architecturalrecord.com* and follow reporting instructions.

rning Objectives

- now the components of fluid applied r/moisture barriers
- ompare the advantages of fluid air/moisture arriers with building wraps and other moisture arriers
- lentify design considerations when corporating fluid applied air/moisture barrier stems into wall assemblies

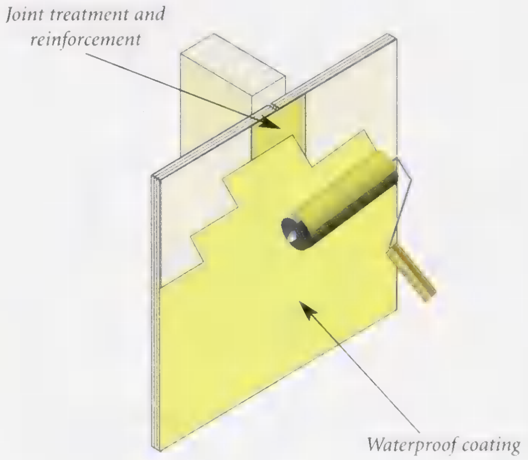


Figure 1a: *Fluid Applied Air/Moisture Barrier applied to sheathing by roller*

Figure 1b: *Fluid applied air/moisture barrier applied to sheathing by spray application*

In the last decade studies (CMHC, *Commissioning and Monitoring the Building Envelope for Air Leakage*, Odom, David J. III, *Preventing Indoor Air Quality Problems in Educational Facilities: Guidelines for Hot, Humid Climates*) have shown *air leakage* to be a significant potential source of condensation and moisture accumulation in building envelope assemblies. By constructing an airtight building envelope the risk of moisture problems—decay, corrosion, loss of insulation value, mold growth and IAQ (Indoor Air Quality) problems—that can occur because of air leakage and condensation are minimized. At the same time airtight construction is likely to be less capable of drying than "air-porous" construction in the event of water leakage or other unforeseen circumstances that cause water to enter into a wall assembly. The designer then must strive to prevent rain water penetration into the wall assembly, to construct an airtight building envelope assembly of compatible air barrier materials, and to enhance the drying potential of the wall assembly in his/her overall design strategy. When incorporating fluid applied air/moisture barriers in wall assemblies, the following considerations are important to effectively control condensation and prevent moisture penetration:

Design Considerations

- Air permeability
- Continuity with other air barrier materials
- Structural integrity
- Durability
- Water penetration resistance
- Water vapor permeability
- Mechanical ventilation
- Construction details and sequencing
- Code compliance
- Climate

Air Permeability

The layers of material that make up a wall assembly have different air permeability. Figure 2 provides a comparison of typical materials used in wall assemblies and their air permeability values.

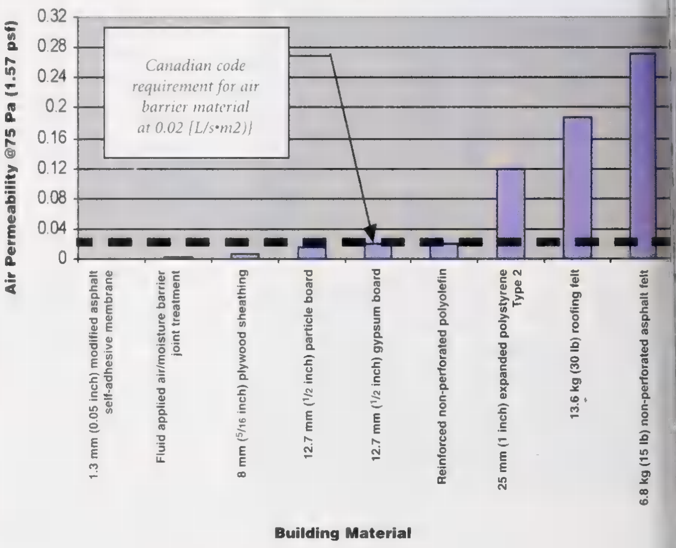


Figure 2: *Air Permeability [L/(s·m2)] of Fluid Applied Air/Moisture Barrier and Common Building Materials*

Sources of Data: *Canada Mortgage and Housing Corporation and Sto Corp.*

Energy codes in the United States have begun to require air tightness of the building envelope, but they are not specific about levels of air permeability for air barrier materials. The generally accepted level based on National Building Code of Canada requirements is 0.02 L/(s·m2) at 75 Pa pressure [0.004 cfm/ft2) at 1.57 psf)]. While many common building materials like plywood and gypsum wallboard meet this standard, a sheathed wall assembly will not perform well as an air barrier unless the joints are treated with an air barrier *material.* The sheathed wall assembly with treated joints then becomes an air barrier *sub-system* of the total building envelope air barrier *system.* The total building envelope air barrier system consists of all the interconnected air barrier *materials*—for example, treated wall sheathing, roof membrane, foundation waterproofing, windows, and doors, and the air barrier connection materials between them.

Barrier Continuity

overall design concept of air barriers in building construction is the tion of a continuous airtight membrane around the building envelope. refore air barrier materials in wall assemblies, to be effective, must be *tinuous.* Breaks in air barrier continuity cause air leaks. In cold climates breaks can allow significant amounts of warm moisture laden air to ipe from the interior environment and condense on a cold surface in the l assembly. Conversely, in hot humid climates, breaks in the air barrier mit moisture laden air from the exterior environment to infiltrate the lding envelope and potentially condense on a cold surface in the wall embly. Any penetration through the wall assembly or termination of the l assembly must therefore be detailed to maintain the continuity of the barrier materials to effectively create an air barrier system. *Without tinuity of the air barrier materials in the wall assembly air barrier system formance is less effective.* The design/construction professional must take terial compatibility and construction sequencing into account when signing an airtight assembly to ensure *continuity.* A number of connecting barrier materials exist that are compatible with fluid applied /moisture barriers to make transitions from one material to the next, for ample, rubberized asphalt membrane tapes to connect from wall eathing to foundation, or low expanding urethane foam sprays for use ween windows and rough openings.

r Barrier Structural Integrity

uctural integrity of air barriers is important because wind loads are nsferred to the most airtight components in a wall assembly, the air barrier aterials, and in turn, are transferred to the structure. Negative and positive nd loads stress air barrier materials. If the materials tear or displace with ading they lose their effectiveness as air barriers. Some building wraps have v air permeability, but they do not perform well as commonly installed, not ly because they have many seams that reduce their effectiveness against air kage, but they are non-structural. If the seams in building wraps are not ped they do not perform well as air barrier materials. Because building aps are non–structural they are susceptible to displacement and tearing with gative wind gusts in cavity wall construction. This compromises their rformance in service.[1]

Fluid applied air/moisture barriers are fully adhered. Adhesion to sheathing ceeds the strength of the sheathing. Tensile adhesion tests show that the per or glass mat facing fails in gypsum based sheathings, while unfaced eathings like plywood show adhesive failure at loads in excess of 344 kPa (50 si, could equate to more than a 2560 km/hr [1600 mph] wind speed). The ructural strength of the fluid applied air/moisture barrier in effect equates to at of the sheathing. Deformation while in service is limited to the eformation of the sheathing. *This means no tears and no compromise in erformance caused by structural loading,* provided the sheathing and ipporting frame are adequate to resist loads.

ir Barrier Durability

Vhile capable of resisting wind loads without compromise in performance, air arrier materials must also demonstrate durability in a number of other ways, articularly if the air barrier is concealed and inaccessible for maintenance.)urability criteria include:

- Resistance to puncture
- Resistance to pests—rodents, termites, carpenter ants, and other insects
- Resistance to low but sustained negative pressures from building stack effect and HVAC fan effect
- Ability to withstand stress from thermal and moisture movement of building materials, and stress from building creep
- Resistance to UV degradation (during the construction period)
- Resistance to mold growth
- Resistance to abrasion

Fluid applied air/moisture barriers generally do not provide a food source for insects or other pests. By virtue of their excellent adhesion to sheathing and prepared concrete or masonry substrates, they are resistant to puncture and they resist loads imposed by stack effect and fan effect, as well as wind loads. Their resistance to stresses imposed by thermal and moisture movement, and building creep, is mainly dependent on the ability of the joint treatment material to span gaps in sheathing without cracking. This performance, in turn, is dependent on the physical properties of the specific joint treatment material. Similarly, the UV resistance, resistance to mold growth, and abrasion resistance are dependent on the physical properties of the joint treatment and waterproof coating materials.

Water Penetration Resistance

The traditional moisture protection used in wall construction is asphalt saturated felt or kraft waterproof building paper. The terms weather-resistive barrier or moisture barrier are often used to describe these components in wall construction. They are generally installed over sheathing by lapping them shingle style and fastening with nails, screws or staples to the sheathing. Their general purpose in walls is to protect against ingress of incidental water into the building and to protect moisture sensitive components like gypsum sheathing in the event of a breach in the outer wall covering, such as a crack in stucco. Building wraps are often used in place of asphalt felt in wall construction, often with the same perceived purpose. The water resistance, air infiltration resistance, and vapor permeability characteristics of building wraps vary widely, depending on the brand of wrap selected (See references, PHRC Report No. 59). Seamless fluid applied moisture protection provides a significant improvement over traditional moisture protection and building wraps. *In fact, they can be 10 times more resistant to water penetration than building wraps and nearly 200 times more resistant to air leakage than asphalt felt* (refer to Figures 2 and 3).

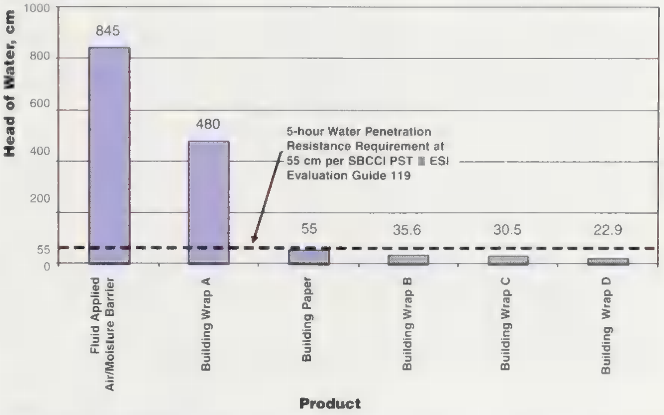


Figure 3: *Water penetration resistance of fluid applied air/moisture barrier material compared to building wraps and building paper. Check online material for figure 3 notes.*

Water Vapor Permeability

A fluid applied air/moisture barrier may or may not be a vapor retarding material. The generally accepted definition of a vapor retarding material is one that has a water vapor permeance of 57.4 ng/(Pa·s·m^2) [1.0 perms] or less. In table 1 the fluid applied air/moisture barrier components are not vapor retarders. The joint treatment has a vapor permeance of 994 ng/(Pa·s·m^2) [17.3 perms] and the waterproof coating has a vapor permeance of 327 ng/(Pa·s·m^2) [5.7 perms], about the same as Type 15 building felt.

Building Material	**Water Vapor Permeance (Perms)**	**Water Vapor Permeance ng/(Pa·s·m^2)**
4 mil Polyethylene[1]	0.08	**4.60**
6 mm (1/4 inch) Plywood[3] (ext glue)	0.7	**40.2**
101 mm (4 inch) Brick[3]	0.8	**46.0**
203 mm (8 inch) Concrete Block[3]	2.4	**138**
25 mm (1 inch) Expanded Polystyrene[1]	5	**287**
Type 15 Building Felt[2]	5.6	**322**
Fluid Applied Air Moisture Barrier Waterproof Coating	5.7	**327**
19 mm (3/4 inch) Plaster on Metal Lath[1]	15	**862**
Fluid Applied Air Moisture Barrier Joint Treatment	17.3	**994**
9.5 mm (3/8 inch) Gypsum Wallboard[3]	**50**	**2873**

Table 1: *Water Vapor Permeance of Fluid Applied Air/Moisture Barrier Materials and Common Building Materials. Check online material for Table 1 notes.*

The purpose of a vapor retarder in wall construction is to minimize water vapor diffusion through the wall assembly and thus reduce the risk and the amount of condensation on cold surfaces in the wall assembly. Whether or not a vapor retarder should be placed in a wall assembly and where it should be placed must be carefully evaluated in relation to climate, the physical characteristics of other components of the wall assembly, and interior relative humidity conditions. In cold climates the predominant water vapor diffusion direction through most of the year is from the inside to the outside, as warm humid air from the interior environment moves in the direction of cold dry outside air. Conversely, in hot humid climates the predominant water vapor diffusion direction through most of the year is from the warm humid outside environment towards the cooler, dryer conditioned interior environment. Based on these general conditions a vapor retarder is customarily placed on the interior of wall construction in cold climates and on the exterior in hot humid climates. A vapor retarder should not be placed on the interior in hot humid climates, since it will potentially cause condensation by restricting vapor diffusion to the interior. The use of interior vapor retarders has been shown to be a contributing cause in many cases of moisture problems and IAQ problems in buildings in hot humid climates. One tool that is available to assist in making decisions about whether a vapor retarder is needed and where to place it in the wall assembly is a water vapor transmission analysis that can be performed manually (see ASHRAE Handbook—Fundamentals, chapters 21 and 22) or by computer (Trechsel, *Moisture Analysis and Condensation Control in Building Envelopes*).

Mechanical Ventilation

A properly functioning air barrier *system* will limit the influence of air infiltration and exfiltration on the heating and cooling loads of the interior environment. This can increase the efficiency of the HVAC system which translates into energy cost savings. However the mechanical ventilation system must still perform its basic functions of:

- Ventilation and exhaust
- Proper distribution of makeup air to interior spaces
- Dehumidification of air
- Filtration of outdoor air

Wind effects, stack effects, fan effects and space configuration and partitio influence how the mechanical ventilation system must be designed to perforn adequately. ASHRAE handbooks provide guidance on mechanical ventilation, and design and control of interior relative humidity conditions to control microbial growth, to minimize condensation potential, and to provide occupa comfort, in relation to air leakage.

Construction Details and Sequencing

"As much as 90 percent of all water intrusion problems occur within 1 percent of the total building exterior surface area. The 1 percent of the structure's faça contains the terminations and transition detailing that all too frequently lead t envelope failures."[1]

Construction detailing is a critical component for the success of any wall assembly. The designer must create details that effectively:

Control rain water penetration that may occur via:

- Gravity flow—water that flows down and to the interior if surfaces are sloped towards the interior, for example, an improperly sloped brick ledge
- Kinetic energy—rain water, for example, being blown directly into large openings
- Capillary action—the tendency of water to travel through narrow openings or cracks in materials toward dryer surfaces, for example, a crack in a mortar joint
- Pressure differentials—the effects of wind pressure, stack effect or mechanical ventilation that create pressure differences across the building envelope, and drive water through cracks or openings

Control condensation that may occur via:

- air leakage
- diffusion

The contractor must in turn coordinate and sequence work so that details are properly constructed. Given that today's buildings are generally "tighter" than they were fifty years ago, the importance of eliminating water intrusion into wall assemblies increases substantially, since water in walls may not readily dry. Some details are fundamental such as the proper sloping of sills and ledges to the exterior, use of drip edges at soffit returns, capillary breaks in construction joints, or lapping of the air/moisture barrier over flashing at the base of a wall (Figure 4) to direct water to the exterior. Other details are more complex, such as maintaining the continuity of the air barrier at a window penetration (Figure 5) and integrating the air/moisture barrier with sill flashing. Whatever the detail, whether straightforward or complex in nature, the development and execution of details is vital to the long term success of the wall assembly, regardless of how well the air/moisture barrier *system* performs. An important advantage of a fluid applied air/moisture barrier in the wall assembly is that it can mitigate or eliminate one of the major forces that cause water infiltration into walls: pressure difference. The fluid applied air/moisture barrier, in combination with venting and compartmenting, can effectively enable the pressure behind the cladding material to equalize with the pressure outside, and prevent rain water penetration caused by pressure differentials (pressure equalized rainscreen).

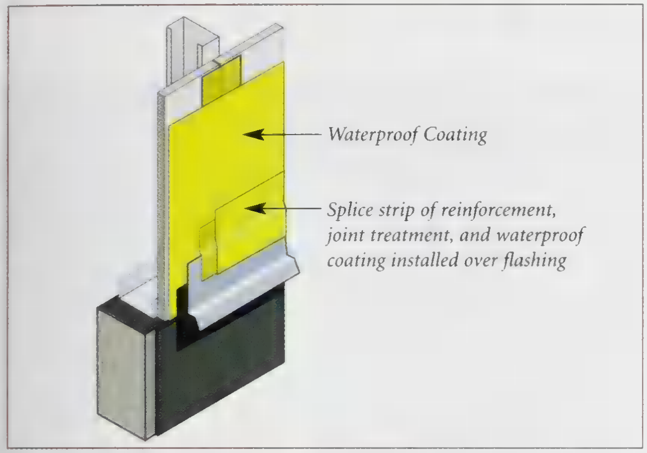

Waterproof Coating
Splice strip of reinforcement, joint treatment, and waterproof coating installed over flashing

Figure 4: *Fluid applied air/moisture barrier lapped onto flashing at the base of the wall to "splice" the two materials and shed water onto the flashing and to the exterior.*

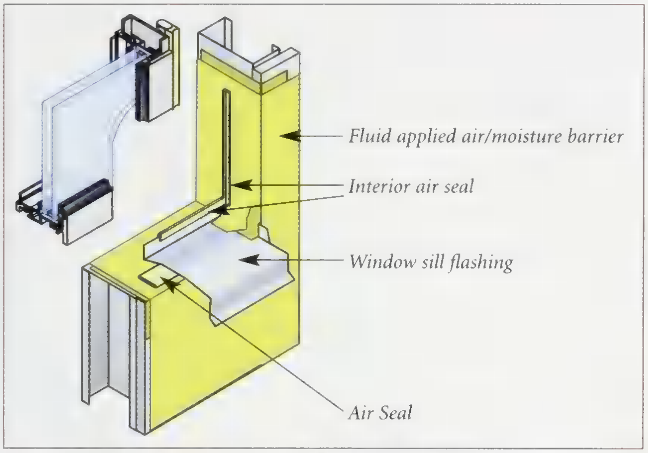


Figure 5: *Integration of the fluid applied air/moisture barrier at the rough opening with interior air seal and sill flashing beneath the window.*

Click for Additional Information

This continuing education section is continued at www.architecturalrecord.com/CONTEDUC/ConteducC.asp.
You need to read the entire section to answer the questions and receive credit.

Learning Objectives

- Know the components of fluid applied air/moisture barriers
- Compare the advantages of fluid air/moisture barriers with building wraps and other moisture barriers
- Identify design considerations when incorporating fluid applied air/moisture barrier systems into wall assemblies

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 278. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. United States energy codes are always specific about the levels of air permeability for building materials.
A: a. True
b. False

Q: 2. Fluid applied air/moisture barriers' excellent adhesion to sheathing and prepared concrete or masonry substrates makes them resistant against:
A: a. Wind loads
b. Insects or other pests
c. Mold growth
d. UV degradation

Q: 3. Seamless fluid applied moisture protection is nearly ______ times more resistant to air leakage than asphalt saturated felt.
A: a. 100
b. 150
c. 200

Q: 4. A fluid applied air/moisture barrier is also always a vapor retarding material.
A: a. True
b. False

Q: 5. In cold climates, a vapor retarder is customarily placed on which?
A: a. the interior side of the wall
b. the exterior side of the wall

Q: 6. "As much as 90 percent of all water intrusion problems occur within ___ percent of the total building exterior surface area."
A: a. 1
b. 5
c. 10

Q: 7. Rain water blown directly into large openings is an example of which mechanism of rain water penetration?
A: a. Gravity flow
b. Kinetic energy
c. Capillary action
d. Pressure differentials

Q: 8. One of the major forces that causes water infiltration into walls is:
A: a. Kinetic energy
b. Gravity flow
c. Pressure difference

Q: 9. Fluid applied air/moisture barriers are proprietary materials and are not listed in model codes.
A: a. True
b. False

Q: 10. In which climate should you use a low permeance rigid insulation on the exterior to resist vapor diffusion to the interior?
A: a. Hot humid climates
b. Cold climates

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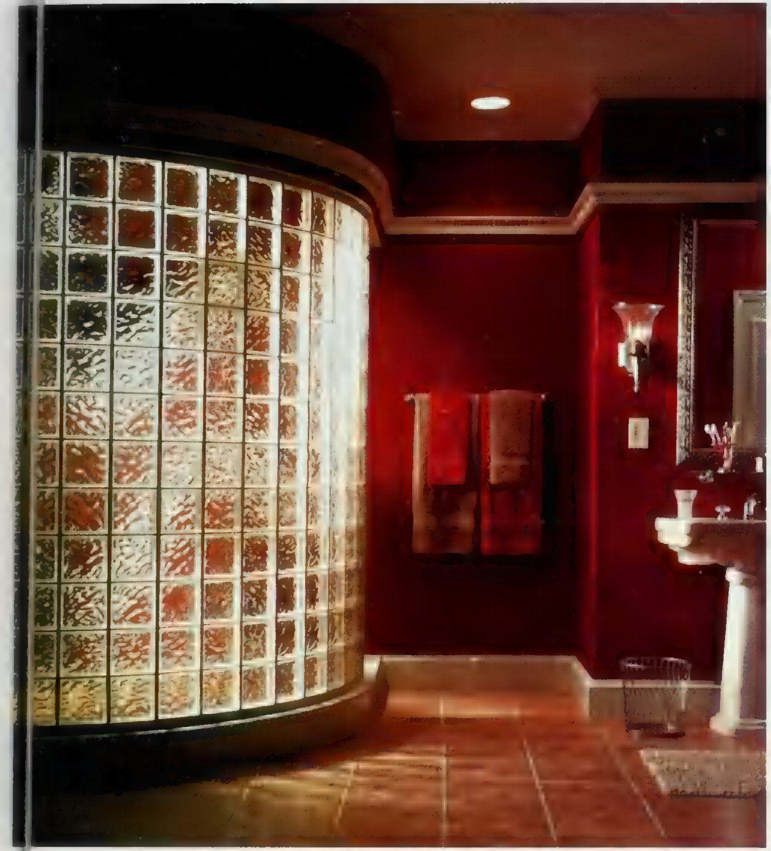

Hy-Lite™ Products presents:

Acrylic Block Offers Privacy and Light

Why do glass and acrylic block products inspire creativity? Because of the many ways they can be incorporated into residential and commercial designs … and because of their attributes. Blocks allow light to flow into an area while protecting privacy. Whether used as a partition in a dental office or as a radius wall shower surround in a master bathroom, blocks help set architectural designs apart.

As many architects know, heavy glass blocks have been incorporated into building designs throughout the twentieth century. Mortared individually on the job site, glass blocks require special craftsmanship and load-bearing capacity to be incorporated into designs. During the past several decades a popular alternative to glass block—acrylic block—has captured the attention of architects worldwide.

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he learning objectives below to focus your
/ as you read Acrylic Block Offers
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are credit, answer the questions on page 219,
follow the reporting instructions on page 280
to the Continuing Education section on
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rting instructions.

rning Objectives

- now features and benefits of acrylic blocks
mpared to glass blocks
- now ways to incorporate acrylic blocks into
sidential and commercial settings
- nderstand options for various configurations of
rylic blocks in designs

Acrylic block products generally come in pre-fabricated modular units—either as fully-framed windows or as panels that can easily be assembled on the job site. Gone are the days when special crews are needed to individually assemble block projects. Now, a general contractor can just as easily install an operable acrylic block window as any other window in a project.

When it comes time to specify acrylic block products, architects find that the weight factor is a significant consideration. Acrylic block products can weigh up to 70 percent less than installed glass block units, thus reducing concerns about load-bearing areas and extra support systems. Acrylic blocks still allow in light while protecting privacy, but they also offer fewer job site concerns.

Understanding Acrylic Blocks

What projects best lend themselves to incorporating acrylic blocks? Every project. That's because acrylic block windows (both operable and fixed) and panels can be specified in a wide array of standard and custom size configurations. Whether you're looking for a large octagon-shaped window, a stair-stepped partition panel or an arched window, they can all be created using acrylic blocks.

The use of acrylic blocks is a flexible design element for residential and commercial projects—and for both new construction and retrofit applications. In homes, acrylic block windows allow for privacy in bathroom areas above tubs and around showers. Casement, awning and hopper windows can be

This dentist office gains privacy and light by incorporating acrylic block radius walls and panels into its design.

incorporated into kitchens, basements and laundry rooms that are oftentimes physically close to neighboring homes. The translucence of the blocks protects privacy while allowing for the transmission of natural light.

In commercial applications, acrylic block panels can be specified in medical office spaces, schools and retail settings. Many restaurants, airports and health spas incorporate acrylic block partitions into their designs for both functional and decorative purposes. In recent years, acrylic block panels have been used in everything from television show settings (including in the set designs of *Jeopardy* and *ER*), as passenger area designations at various Southwest Airlines airport gates and even incorporated into exterior signage.

One of the areas architects appear to appreciate acrylic block's features most, is in dealing with renovation and historic restoration projects. Oftentimes existing restrictions on weight make it difficult to bring glass block walls into an existing project when it's time to renovate. Those concerns are lessened with acrylic block panels. Because the panels and windows weigh far less than installed glass block, acrylic block products have become the product of choice for architects working on restoration projects.

Looking for inspiration on how to incorporate acrylic blocks in projects? Consider these ideas:

- When redesigning existing warehouse-type space into offices, cubicles or privacy areas, use acrylic block partitions of varying heights and lengths to promote light flow, privacy and assist with sound control.
- If you're creating a clubhouse, pool area, spa or health facility, specify acrylic block windows and partitions to protect privacy.
- Looking to bring light into a hotel room or medical facility that overlooks an unsightly rooftop or other unappealing view? Acrylic block windows can transform even the most unattractive outdoor areas into obscure images of light and color.
- Create a logo or decorative design using different colored acrylic blocks in a feature wall for either a residential or commercial application.
- Release "trapped light" in the home by specifying doorlight inserts for interior doors. The translucent acrylic blocks protect homeowner privacy while allowing light to flow from room-to-room. Exterior doorlight inserts are also available for creating unique entryways.
- Add light under kitchen cabinets against exterior walls by specifying staggered acrylic block fixed units just above the countertop.
- Create a unique room divider or under-counter partition in a retail or restaurant setting with an acrylic block radius wall. Available in an assortme of sizes and heights (up to 86 inches tall), radius walls come in a variety of arcs from below 90-degrees (quarter circles) up to 180-degrees (half circles)
- Need an extra burst of light in a project? Try specifying tube lighting withi acrylic block panels. Low-voltage tube lighting is ideal for blocks surrounding mirrors in homes, beauty salons and other high-end settings. The fixtures can be installed either horizontally or vertically in panels made with three-inch thick blocks.
- Eager to add even more light? Try fiber optic lighting set inside a structure made out of acrylic block—located, for example, at the base of a bathtub, table or wall partition.
- Create a combination of acrylic block and clear glass by designing a square or rectangular glazed panel inserted into an acrylic block wall. In the application, a framed "doughnut" window is created using acrylic blocks leavin the center portion open for installation by a local dealer of a center glass panel.

Specifics of Acrylic Blocks

Appreciated mostly for their ability to encourage light flow while promoting privacy, acrylic block panels and windows have many appealing features and benefits. The blocks are joined together with a clip system internally and then sealed together with an innovative caulking compound specially formulated to spread and dry evenly, sealing to the block on all sides.

Mechanically applied for even distribution, the caulking is cured and systematically air-dried—resulting in consistently smooth, straight caulk lines. Unlike mortaring of glass blocks, which is field-applied and dependent upon th skill of individual applicators, the caulk will not crack, flake, chip or discolor. The durable caulk is water resistant, and offered by some manufacturers with a mold inhibitor. Some manufacturers also offer a 10-year warranty against the discoloration of the caulking or block, against seal breakage and against failure of the units due to workmanship.

Along with being lightweight and easy to install, acrylic block products require only minimum long-term maintenance. Both vinyl frames on acrylic block units (which come in white and tan generally) and aluminum frames (in

Waist-high acrylic block panels at the Southwest Airlines gate area at the Providence, RI airport help passengers line up for their flights.

e artist owners of this historic home nsformed their attic by using acrylic ck walls and panels to define office d living spaces.

ite, tan, bronze and clear anodized) ially wipe clean with a damp cloth. n the low-profile frame options, ich maximize visibility of the acrylic ocks, can be cleaned easily. Acrylic-safe aners should be used on the blocks. Scratch and gouges can usually be tored with a polishing compound.

When specifying acrylic block products, there are many product options ilable that architects need to be aware of. Most manufacturers offer both - and eight-inch square blocks—and some offer thicknesses ranging from e to three inches. Triangle-shaped blocks are also available, allowing for the nstruction of diamond configurations.

One of the most popular aspects of acrylic blocks is the variety of colors d patterns. While clear, frosted and green are the most widely specified lors, other options, including peach, blue, gray, amber and pink are also ailable from many manufacturers. Architects can also combine several of the lor combinations to create customized designs. Surface patterns—such as ear wave, frosted wave, and clear cross rib—can also be combined. Similar to lecting from an ala carte menu at a restaurant, architects are offered an npressive amount of choices for creating customized and standard designs sing acrylic block products.

Another way architects can accent a room is to specify that decorative untins cover the caulk lines in the interior of an acrylic block product. vailable in metallic finishes, woodgrain and paintable/stainable versions, the untin covers (and matching perimeter trim) add a decidedly upscale look to project, allowing the units to complement other room elements.

crylic Blocks Pass the Test

y the numbers, acrylic block products are a solid addition to any project esign. Window units from major industry manufacturers offer similar hermal benefits to traditional, dual-glazed units and are safety glazing pproved and AAMA certified for use in Wind Zones II and III.

Safety glazing is required in bathrooms, entryways and other locations hroughout projects depending on local building codes. Most acrylic block vindows are qualified to be used in applications where tempered glass is required. Both aluminum and vinyl framed windows have passed the ANSI Z97.1-1984 tests.

The weight of acrylic block window units is substantially less—up to 70 percent less—than that of installed glass block units. For an aluminum-framed window constructed of six-inch blocks, two-inches thick, the weight of the unit is just 4.1 pound per square foot. A vinyl-framed window using similar materials weighs approximately 3.7 pounds per square foot. When comparing to a similar glass block configuration weighing in at a hefty 12 pounds per square foot, it's easy to see the benefits of acrylic block.

How do acrylic block windows perform as thermal barriers? The National Fenestration Rating Council (NFRC) rates the U-Value for residential in a range of .51 to .55 depending on the size and depth of the block for products with aluminum frames. With vinyl frames, the rating is .46 to .49. In non-residential applications, the range for aluminum-framed windows is .50 to .54 and .46 to .49 for vinyl windows. These numbers are similar for an energy efficient acrylic block window as they would be for a dual-glazed glass window.

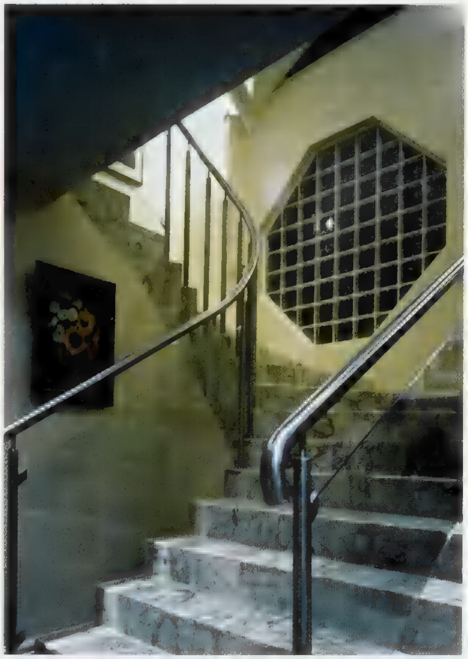
Shape and Size Options

Architects specifying acrylic block products in their designs find them a creative and versatile way to add a striking design element to commercial and residential settings. Configurations and designs are almost limitless based on creativity.

Geometric shaped windows are available in octagons, triangles and even roundtop styles. Large picture windows, archtop windows and stair-stepped designs can be created by many manufacturers. Combining these shapes and styles with stair-stepped partitions, radius wall shower surrounds and interior doorlights allows a project to take on a style all its own—while protecting privacy of the occupants.

When the challenge is unleashing trapped space in bathrooms, laundry rooms and closet areas while protecting privacy, acrylic block windows offer a unique solution. From a one-block window unit to a massive wall of acrylic blocks, architects have the capability of using acrylic block configurations in a wide variety of ways.

A stunning accent in an entryway for a commercial or residential project is an acrylic block insert unit. In this piece, a glass unit is surrounded by an acrylic block "frame" to combine both traditional glass and the lightweight acrylic block. The glazing insert option



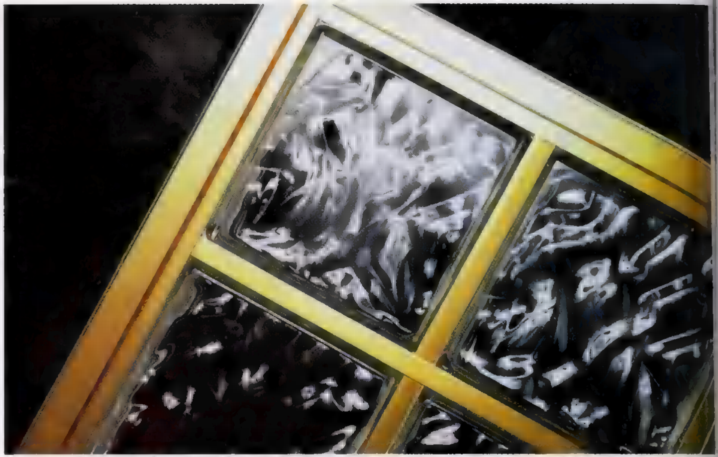
Geometric-shaped windows, including this octagon, can serve as a focal point in both commercial and residential settings.

allows for the customization of a center glass panel surrounded by the acrylic blocks. In the application, a framed "doughnut" window is created using acrylic blocks leaving the center portion open for installation by a local dealer of a glass panel.

The glazing insert option is especially appreciated in applications where a home or business owner may wish to have a window unit of an engraved glass panel surrounded by acrylic blocks. The glazing insert option provides the flexibility to allow for acrylic block products to be combined with glass panels to create a striking showpiece window.

Available for both new construction and retrofit windows, the glazing insert option is available in either a square or rectangular shaped glass panel. The inner opening must be surrounded on all four sides by at least one row of acrylic block. The size of the glass must be the equivalent of the blocks removed from the overall pattern minus three-quarters of an inch.

The acrylic block manufacturer provides the complete inner glazing frame in aluminum, plus the glazing tape, making it easy for a dealer to install the selected glass panel. The exterior frame is available in either aluminum or vinyl. As long as the inner opening is surrounded by at least one row of acrylic blocks on all four sides, the size options are endless.


Acrylic block windows can be transformed to match any room décor with decorative muntin and trim coverings. This unit shows a bright gold covering.

Whether creating a signature design, such as a decorative Southwestern style window in a master bedroom, or a stair-stepped shaped window in a hallway, architects find an abundance of design and product options available from acrylic block manufacturers. These unique products—coupled with the creativity of designers and architects—allow projects to gain strong design and privacy enhancements with unique fixed and operable acrylic block window units, partitions, walls and shower surrounds.

Attention to Detail

Different than glass blocks that are mortared together on site, acrylic block components are assembled at the factory.

Acrylic block windows and panels can range in size from a fixed unit containing just a single block to a massive picture window stretching eight feet by eight feet to fill an entire wall opening. No matter the size, at the majority of acrylic block manufacturers, each unit is subjected to the same high levels of quality control in the factory.

A

B

The step-by-step construction process for many manufacturers includes:

1. Verification of order details, including size and style of units; block size, pattern and color to be used; frame selection; special options (i.e.: perimeter and muntin trim, combination of different colored blocks, etc.).
2. Construction of a custom made aluminum or vinyl frame as specified by the customer. Aluminum frames are thermally-broken for increased thermal performance and have a stream-lined design. Vinyl frames are fusion-welded and never need painting. New construction products include integral nailing fins for fast, easy installation. (*photo A*)
3. Hand placement of individual blocks in frame. Blocks are tightly assembled into complete units using rugged polymer clips. (*photo B*)
4. After laying the units flat, an exclusive, fade-resistant synthetic caulking compound is applied to permanently seal the blocks together. Once the unit has cured for 24 hours, it is turned and caulking compound is applied to the reverse side. Another 24-hour cure time follows. (*photo C*)
5. Frame elements are affixed to each unit, including weather stripping and operating hardware. (*photo D*)
6. Following careful inspection and application of optional muntin and trim covering, the unit is packaged for shipment. (*photo E*)

C

D

E

Some manufacturers use blocks that are hermetically sealed to help prevent condensation. The high-quality durable acrylic blocks stand up against harsh weather conditions and resist discoloration and scratching.

Click for Additional Information

As part of this CES learning activity, you are required to read some additional material. Some of the test questions below will relate to the additional reading material. Go to www.architecturalrecord.com/CONTEDUC/ConteducC.asp to access the material online.

Learning Objectives

- Know features and benefits of acrylic blocks compared to glass blocks
- Know ways to incorporate acrylic blocks into residential and commercial settings
- Understand options for various configurations of acrylic blocks in designs

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 280. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Acrylic block products can weigh up to ___ percent less than installed glass block units,
A: a. 40
b. 50
c. 60
d. 70

Q: 2. The blocks are joined together internally with a:
A: a. Caulking compound
b. Clip System
c. Muntins

Q: 3. Caulking of acrylic blocks are field-applied.
A: a. True
b. False

Q: 4. Most acrylic blocks are qualified to be used in applications where tempered glass is required.
A: a. True
b. False

Q: 5. The weight of an aluminum-framed window constructed of six-inch acrylic blocks, two-inches thick is:
A: a. 4.1 pounds per square foot
b. 6.2 pounds per square foot
c. 12 pounds per square foot

Q: 6. The U-Values for an energy efficient acrylic block window are similar for a dual-glazed glass window.
A: a. True
b. False

Q: 7. The best way to remove light scratches from acrylic blocks is by using:
A: a. Comet
b. Bleach
c. Furniture polish
d. Windex

Q: 8. Acrylic block windows come in which versions:
A: a. Operable Casements
b. Fixed Picture
c. Basement Hopper
d. All of the above

Q: 9. An anti-fungicide in the caulking of some manufacturer's products prevents the spread of mildew in acrylic block products.
A: a. True
b. False

Q: 10. The glazing insert option available from some acrylic block manufacturers
A: a. Allows acrylic blocks to be glazed
b. Provides the flexibility for acrylic block products to be combined with glass panels
c. Offers builders and remodelers a way to sandwich together glass blocks and acrylic blocks in one project

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ABOUT HY-LITE® PRODUCTS

With manufacturing facilities in California, Georgia, Canada, Japan and Australia, Hy-Lite Products is the industry leader in the production of acrylic block panels, fixed and operable windows, partitions, radius walls, shower surrounds and doorlight inserts. The company's award-winning products are specified and installed in both new construction and retrofit applications for commercial and residential projects. Hy-Lite offers a QuickShip(SM) program providing standard-sized units in two days. Other products are available within seven business days. For more information on Hy-Lite Products and to locate a dealer, call 877-712-4013 or visit the company's web site at www.hy-lite.com on the Internet.

Hy-Lite
PRODUCTS, INC.

101 California Avenue
Beaumont, CA 92223
1-800-827-3691
Fax 1-800-827-4920
www.hy-lite.com
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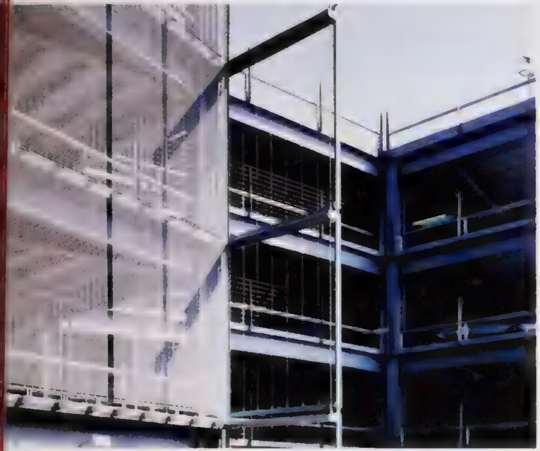
lding Tomorrow's rking Structures Today th Steel Frames



el Parking Structures Making a Comeback!" reads the headline ecent issue of *Parking Today*, the leading independent trade publication of the US parking industry. Steel framed parking structures today are radically different than their predecessors. New high performance paint systems and modern galvanizing techniques have satisfied corrosion concerns and provide a protective, attractive finish that lasts for decades. Choosing a steel framing system will improve the return on your investment through benefits that concrete cannot provide including:

- lower construction costs
- greater parking density providing more parking spaces
- bright, open interiors enhancing patron security and comfort
- earlier occupancy from reduced construction time and simplified construction practices
- reduced maintenance costs as opposed to escalating restoration costs
- superior long-term durability
- unlimited opportunity for aesthetic expression
- greater design flexibility
- simplified maintenance procedures
- adaptability to irregular sites
- reduced foundation requirements resulting from a lighter structure
- convenience and ease of future vertical expansion

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he learning objectives below to focus your as you read **Building Tomorrow's Parking tures Today with Steel Frames**. To earn one CES Learning Unit including one hour of 1 safety welfare credit, answer the questions ge 225, then follow the reporting instructions ge 280 or go to the Continuing Education on on *www.architecturalrecord.com* and follow eporting instructions.

ning Objectives

- derstand the current design parameters for en deck parking structures
- ow the benefits of steel framing for open deck rking structures
- plore the use of different coating technologies provide long term corrosion resistance
- ow how design elements can impact the g term maintenance of open deck parking uctures.

Open Deck Parking Structures

During the past several decades, the open, above-ground, multi-level parking structure has been increasingly dotting the country's urban and suburban landscape. The scarcity and cost of urban sites for inefficient grade-level parking lots together with the growth of large suburban malls and office parks have propelled structured parking to a prominent position in the nation's building inventory.

Cologne-Bonn Airport & Car Park; Murphy/Jahn Inc.

Open deck parking structures typically provide multi-level parking for at least 150 vehicles and have at least two sides that are a minimum 50% open to the outside. The open parking structure is preferable to enclosed structures in that it does not require mechanical ventilation and specialized fire protection systems. Open deck structures also create an increased sense of security for the patron and are easier and less expensive to construct. A vehicle is designed to be exposed to weather conditions and is ideally suited to the environment of an open deck structure.

Open deck parking structures have two major structural systems: the framing system which forms the skeleton of the structure and the deck system upon which the vehicles drive and park.

There are three basic material choices that owners and developers have for the framing systems:

- Fabricated structural steel framing (beams, girders and columns) supporting a concrete deck
- Cast-in-place concrete framing (concrete formed, poured and cured on the construction site), conventionally reinforced or post-tensioned
- Precast/prestressed (manufactured off-site) concrete framing using long span double tees for deck

Three deck options are generally utilized:

- Precast systems utilizing long span double tees (40 to 60 foot long concrete sections that have two "T" stems extending down from the deck)
- Cast-in-place floor slabs with conventional steel reinforcing utilizing stay-in-place steel deck
- Cast-in-place post-tensioned floor slabs utilizing steel cables to compress the slab [illegible] by placing the cables or tendons in tension

Unlike the concrete framing systems, only the steel framed parking structure provides the opportunity to use any of the three concrete deck systems. This is one major advantage in choosing structural steel for a parking structure.

Evaluating Costs

The initial costs of an open deck parking structure are determined by the selection of a site, subsurface conditions, the choice of a framing and deck system, local labor and material prices, and financing costs during the construction period. The speed of design and construction is particularly critical to revenue generating parking structures or in situations where an adjacent office building or similar structure cannot be fully leased until adequat parking is provided. The parking designer should take each of these factors into account in the original budget provided to the owner. Cost reductions can be accomplished through:

- the choice of structural systems that may minimize overall structure weight reducing the foundation requirements
- optimizing bay sizes for maximum parking capacity within the structure's footprint (or minimizing structure size for a given parking requirement)
- the evaluation of various façade options

The expenses of ownership of a parking structure do not end when the first car is parked. Ongoing maintenance programs are critical to the long-term life of the parking structure. A regular program of preventive maintenance at a reasonable annual cost can avoid the future expense of major renovation. The cost of these preventive maintenance programs and the anticipation of future remedial actions must be taken into account when evaluating the true cost of ownership, the life cycle cost of the structure. Items to be considered for maintenance and remedial action are:

- the expected life of the concrete system including the quality of the wearing surface and joints
- the replacement of concrete sealers and membranes
- the structural integrity of the concrete deck, columns and beams
- the performance of the coating system on steel members
- the integrity of the drainage system
- the condition of rails and facades

The choice of framing system can greatly impact the life cycle cost of a parking structure. A comprehensive life cycle cost study was recently performed by an outside consultant of a steel-framed parking structure at Newark Airport for the Port Authority of New York and New Jersey. The findings of that study verified that their steel framed structure was the most cost-effective solution both in terms of construction and life-cycle costs (*Modern Steel Construction*, April 2001).

Closely related to life cycle costs is the evaluation of the long-term durability of the structure. Concrete decks and structural members deteriorate as a result of chloride migration compromising the structural integrity of the parking structure. This may necessitate the removal and replacement of deck slabs or the need to structurally reinforce concrete columns and beams through the use of steel bands or concrete encasement techniques. Addressing these structural concerns is a costly, time-consuming process that will take the structure out of operation and often results in reduced parking capacity. When a concrete deck on a concrete framed structure requires replacement, the entire structure may have to be demolished while in a steel framed structure, the original framing system can be cleaned, repainted and reused in the rehabilitated structure.

Maintenance or "life-cycle" costs are directly impacted by the ease of maintenance of the parking structure. Ease of maintenance should be considered in the initial design of the structure, including:

vard Square Parking Garage, Cambridge, MA; Maguire Group

- drains should be located at points of easy access
- structural connections should be exposed for inspection
- expansion joints should be laid out for easy replacement of seals
- storm water discharges should be accessible and direct flow away from the structure
- a defined procedure simplifying upper deck snow removal should be included
- visual inspection opportunities should be optimized
- areas of the structure should be able to be easily catalogued for tracking progressive deterioration.

For many parking structures, the ease of construction will have a direct aring on the construction costs of the project. Issues to evaluate should include:

- availability of storage space on the site for material delivery
- foundation conditions
- the ability of structural materials to be placed in winter conditions
- crane setup locations
- tight erection clearances
- the ability of trucks to deliver components in congested areas
- the erection sequence of components
- the ability of the partially erected structure to be self supporting
- the need for shoring and bracing

In seismic regions the design of the parking structure must take into ccount lateral forces due to seismic (earthquake) loading. In seismic design, e dead load, full live load and the seismic loads are combined and the ructure is designed for combinations of these effects. Common lateral load sisting systems used in steel parking structures are:

Braced frames where the lateral load is resisted by diagonal members
Flexible moment connections or semi-rigid frames designed to distribute the lateral load through controlled displacements
Moment frames where the lateral load is resisted in the stiffness of the connections between the steel members

Concrete framed structures typically require the use of large concrete shear walls or complex moment frames. Shear walls disrupt the openness of the parking structure's design and create security concerns. Concrete moment frames require a high degree of field expertise and may extend outside the footprint of the structure requiring additional site area.

The selection of the façade treatment on a parking structure is important from a security, aesthetic and cost stand point. Parking structure owners and developers are now realizing that the first impression a visitor receives of their organization is often conveyed by the parking structure. Many municipalities are now requiring that parking structures blend into the architectural aesthetics of the neighborhoods in which they are located. For these reasons the choice of a façade treatment can be a critical choice for the structure. Façade systems are available to create literally any exterior treatment desired by the owner. A steel framing system provides the design flexibility to allow the architect to conceive an exterior façade system that is at once economical, attractive, compatible with the surroundings, acceptable to reviewing agencies and "open" to eliminate a fire resistance requirement. Even in cases where a desired façade may not contain the required amount of openness to allow the structure to qualify as an open deck parking structure, the desired façade may be used on one side of a structure while a more open façade can be used on the other sides allowing the structure to meet the openness requirements.

Economical, detached, above-ground steel framed parking structures have been typically built for $5,000 to $10,000 per space depending on the region of the country (costs are from the year 2000). Cost-per-space of a structure can escalate rapidly if the façade itself is very elaborate, difficult to fabricate and install, especially if the perimeter-to-floor area ratio is high. A massive, heavy facade can add substantial load to the perimeter foundation and require more costly design, detailing, fabrication and erection for seismic resistance. The most economical façade is simple, serves as a structural safety barrier, and is easily attached to the steel frame.

Safety, security and patron comfort issues have a necessary influence on parking structure design. The brightness of interior finishes and smoothness of the ceiling impact the type and quantity of illumination. From a safety perspective, 90 degree parking with wide aisle widths may be preferred. The "over-cut basement", in which earth is removed from around below-grade levels, provides an opportunity to eliminate structural fire protection,

Burlington International Airport, Burlington, VT; Hybrid Parking Solutions introduce natural light and eliminate totally enclosed levels. External glass-enclosed elevator and stairwell cores improve visibility and increases the sense of security for patrons. Video monitoring and emergency call systems improve security and help patrons with car trouble to obtain assistance.

Functional Design Parameters

In establishing the feasibility, size, design concept and cost of a parking structure, the average floor area to be occupied by one parking space must be determined. This figure is obtained by dividing the total square footage of the structure (all levels) by its capacity, in total number of cars to be parked. The area-per-space ratio depends on many factors: size and shape of the buildable area; stall size, aisle width and ramp design; ratio of small to full-size cars; short or long span module; traffic flow system; mixed-use occupancy requirements (above or below); and local ordinances. The average area per space can vary from about 280 square feet to 400 square feet. For planning purposes 320 square feet to 350 square feet is typically used. When comparing average cost per space (i.e., cost per car) for design alternatives the design efficiency (area/space) must be considered. Steel columns are substantially smaller than corresponding concrete columns allowing for an increase in the number of spaces per floor.

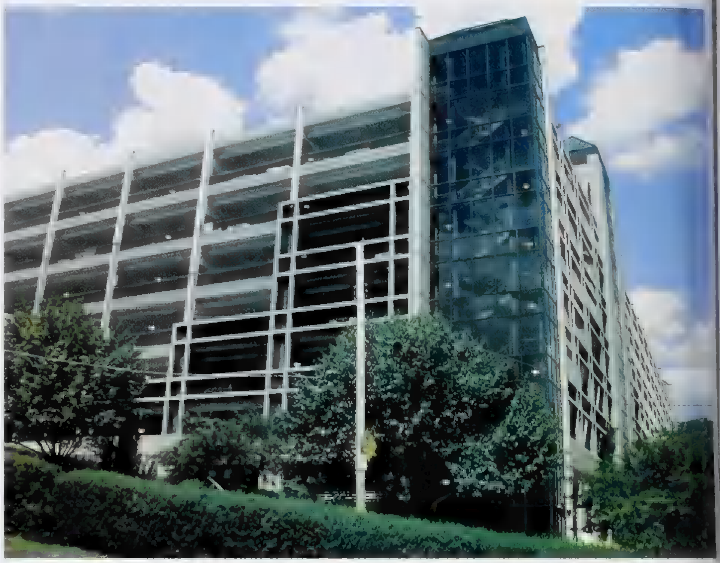
In recent years, angle parking has become a popular stall design for self-parking structures, primarily because it is easier for drivers to maneuver and less driving aisle is needed than for 90° stalls. Angle parking, typically 50° to 70°, consumes a larger floor area per space than 90 degree parking with two-way aisles but the parking module, and perhaps even the over-all width of the structure, can be narrower. Angle parking uses one-way aisles, which may reduce congestion, but the narrower aisle may be perceived to be less secure for patrons walking to and from their cars. The 90° stall pattern allows a more uniform grid and appears to simplify ramp design.

For a "one-size-fits-all" design, assuming a 70/30 ratio of large to small cars and 90∞ parking, an 8 foot 6 inch. space width and a 60 foot wall-to-wall module may be used for planning purposes.

Bay sizes and interior spans in a parking structure are often dictated by factors other than parking efficiency. Framing for parking below steel-framed multi-story office or residential space having a 25 foot by 27 foot bay size will probably be more economical if the steel columns continue directly down through the parking levels to the foundation, avoiding structural transfers to longer bays at the transition floor. Long span modules, typically 55 foot to 65 foot, may be heavier, but cost 10% less due to fabrication and erection efficiencies. The number of stalls within the structure can be increased or the overall size of the structure can be reduced through the use of long span design. Advantages of long spans in parking structures include:

- column-free areas that simplify maintenance and improve illumination
- less opportunity for damage to automobiles
- more openness and improved psychological effect on patrons (safety, comfort)
- greater flexibility to re-stripe stalls in the future
- .fewer spaces lost to careless parkers in three-car bays

In parking structures with 55 foot to 65-foot spans, total floor depth will depend largely on the steel beam depth. Depending on the bay size, these spans are typically made with W24 to W30 composite design beams of A992 (standard 50 ksi) steel. It would appear that for the long span parking structure, a minimum total floor depth of around 30 inches must be expected. If shallower floors are required, shorter spans have to be considered. Thus, the designer shoul determine very early if there is a limitation on the depth of floor construction in the parking structure, because such a restriction can have a significant impact on the column grid and on selection, design and cost of the floor system to be used.


Allegheny General Hospital, Pittsburgh, PA; Mulach Parking

Depth of floor construction has emerged as an important factor governing the selection and design of floor systems for many types of buildings. Restriction of floor construction depth arises from local zoning (either total height or headroom), matching floors of an existing connected building, ramp grade requirements, and, for below-grade levels, shallow bedrock or a high water table. The minimum recommended clearance or headroom for parking structures is 7 foot 2 inches. (sometimes codified), but clearances as low as 7 foot 0 inches may be used. (The designer should consider detailing for a clearance that is 2 inches greater than the minimum required to allow for tolerances in beam camber and construction.) Where van access by disabled patrons is required, the minimum clearance to the lowest overhead obstruction is 8 foot 2 inches. To determine story height the designer should factor in the thickness of any mechanical and electrical services and fire protection that will run below the structural framing systems. Consideration should be given to running these services through web openings in steel framed structures.

Astute structural engineers have been successful in condensing steel beam floor construction to acceptable depths by the use of high-strength steel, LRFD (load and resistance factor design), cambering, composite beams, beam web penetrations, castellated beams and innovative steel beam/concrete floor systems.

In parking structures, as in all buildings, greater floor-to-floor height translates directly into increased cost of facade and other vertical building elements. With a simple and economical facade, the impact of this element on total cost is minimal. Decreasing depth of floor construction, below that of the most economical framing, may increase floor framing cost to some threshold that will exceed the savings accrued through lower total building height.

Depending on the length of horizontal run available, desired ramp grades may influence depth of floor construction. Generally, straight-run ramps with no parking stalls or pedestrian traffic on either side have 10% to 15% grades (slopes); a 12% maximum slope is suggested for long ramps. Any ramp with a slope greater than 14% will require a transition slope at the end of the ramp. Single lane ramp widths are usually 12 feet curb-to-curb, but 15 feet to 16 feet is advised if approaches or turns are particularly sharp. For the parking ramp itself, a 5% grade is preferred under ADA guidelines, although a 6% slope is generally acceptable.

Structure Height and Fire Safety Requirements

Under all of the model building codes, no fireproofing is required for structural steel members in an open deck parking structure less than 75 feet in height as long as any point on any parking tier is within 200 feet of an open side. It should be noted that the height of a parking structure is measured to the top of the deck for the top parking tier, not to the top of any facades or parapet walls (this is based on the treatment of the top tier as the "roof" of the parking structure with parking allowed on the roof). When parking is being provided on the lower floors of a mixed use structure, the lower parking floors must be fire separated from the upper floors and be fire rated.

It is possible for a steel framed parking structure to exceed the 75 foot limitation based on the square footage of each tier and the number of open sides. The prospective owner of a parking structure should consult with local building code officials to determine any local modifications of the relevant code provisions.

When evaluating tier area and structure height the impact of any future vertical expansion should be taken into account. Properly designed steel framed parking structures provide a readily expandable structure.

Click for Additional Information

As part of this CES learning activity, you are required to read additional materials. Some of the test questions below will relate to the additional reading material. Go to www.architecturalrecord.com/CONTEDUC/Conteduc.asp to access the material online. To obtain a faxed copy of the materials, contact the Steel Solutions Center at 1-866-ASK-AISC or email solutions@aisc.org.

Learning Objectives

- Understand the current design parameters for open deck parking structures
- Know the benefits of steel framing for open deck parking structures
- Explore the use of different coating technologies to provide long term corrosion resistance
- Know how design elements can impact the long term maintenance of open deck parking structures.

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 280. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Typically, the average area allocated in a parking structure per space is:
a. 250 sq ft
b. 400 sq ft
c. 320 sq ft
d. 200 sq ft

Q: 2. The following is not a viable structural option for an open deck structure:
a. Structural steel frame with a pre-cast double tee deck
b. Cast-in-place beams and columns with a post-tensioned concrete deck
c. Structural steel frame with a post-tensioned concrete deck
d. Pre-cast concrete frame with a cast-in-place concrete deck

Q: 3. The Achilles' heel of an open deck parking structure is:
a. concrete deck cracks
b. parking control equipment
c. corrosion on protected surfaces
d. façade attachments

Q: 4. Steel framed parking structures are:
a. less durable than concrete structures
b. more expensive than pre-cast parking structures
c. 10% to 20% less costly than concrete structures
d. more complex to erect

Q: 5. Effective corrosion protection in parking structures can be obtained by the use of:
a. acrylic paint
b. galvanizing
c. weathering steel
d. spray membrane coating

Q: 6. Foundation requirements for a steel framed parking structure:
a. are greater than a comparable concrete structure
b. prohibit vertical expansion
c. are less than for a comparable concrete structure
d. require short span construction

Q: 7. The minimum recommended headroom clearance for a parking structure is:
a. 7 foot 2 inches
b. 6 foot 8 inches
c. 8 foot 6 inches
d. 6 foot 10 inches

Q: 8. Fire protection is not required for steel framed parking structures:
a. less than 30 feet in height
b. less than 75 feet in height when the maximum distance to an open side is 200 feet
c. that are sprinkler equipped
d. less than 100 feet tall

Q: 9. Typically the most efficient layout for parking bays is:
a. 70 degree angle parking with one way aisles
b. parallel parking
c. 90 degree parking with two way 60 foot bays
d. 90 degree parking with one way aisles

Q: 10. Life-cycle costs for steel framed parking structures:
a. are less than for comparable concrete structures
b. with post-tensioned decks average $1.00 per sq ft per year
c. cannot be estimated
d. are dependant on the type of vehicle parked in the structure

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LIGHTING

Eat, drink, shop, sightsee: Sharp, inventive illumination leads the way

Everything Is Illuminated is the title of a wonderful new book by Jonathan Safran Foer. No, it's not the nostalgic memoirs of a veteran lighting designer pontificating about a lifetime's work with klieg lights, filaments, and foot candles, but a remarkable first novel by a precocious young writer. Though lighting is not the novel's central theme, the title has become a kind of mantra for me. As both a fiction writer and journalist covering lighting design, I find that my dual interests rarely converge. Oh, there is the book-list genre sometimes dubbed "light fiction," of course, which calls to mind the latest Jackie Collins summer beach read ("Will Lucky remain head of the film studio, marry her true love, the Count de Fortbrasso, or fall head over heels for the on-set lighting technician?"), but how often does literature put lighting in the spotlight? In our more William Safire-like semantic moments at RECORD, we editors often debate the best choice of descriptive term that will translate the specific quality of a project's certain ethereal glow or moonlight-dusted backdrop. Good writing, like good lighting design, only *looks* easy.

Illumination is the key word around our office. Though we try to avoid "preaching the gospel" of good lighting design, we often find that an architectural installation, when accurately and thoroughly documented, can "illuminate" the technical specifications, and perhaps artistry, behind designing with electric light.

The projects and profiles in this issue indeed demonstrate that everything is illuminated. From a sophisticated restaurant and a jewelry boutique in New York City to the globetrotting "light magic" of Frenchman Yann Kersalé, plus stops along the way to check in with our Canadian colleagues, our tour displays the spectrum of styles, approaches, and applications possible with today's new sources. Charles Linn also updates us on some new twists in fiber optics. And what lies ahead? For February 2003, we're working on a lighting-education report, to survey how our readers came to be so "enlightened." Please forward your insights to me at: bill_weathersby@mcgraw-hill.com. I might see the light. *William Weathersby, Jr.*

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3deluxe
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Bentel & Bentel Architects
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TECHNOLOGY BREAKTHROUGH:

The Look of Low Voltage at a Fraction of the Energy.

Energy issues can keep designers from specifying the lighting they want. Take halogen fixtures, for example. They're small, attractive and produce focused accent and downlighting. But because halogen isn't energy efficient, compact fluorescent often gets specified instead, even when it's inappropriate.

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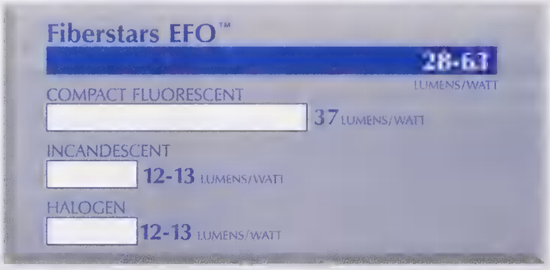

Independent tests show that a single 75-watt Fiberstars EFO™ system can deliver MR16-like performance from a fraction of the energy.

It's all made possible by CPC Optics,™ a patented system that transmits light to fiber in an entirely new way, redefining fiber optic lighting performance. There's still no local heat, electricity or harmful U.V. And because one lamp powers six fixtures, EFO is exceptionally easy to install and maintain.

It's a breakthrough so impressive it's hard to believe. So don't take our word for it—ask your Fiberstars representative for a demonstration.

JAY GRAHAM PHOTO

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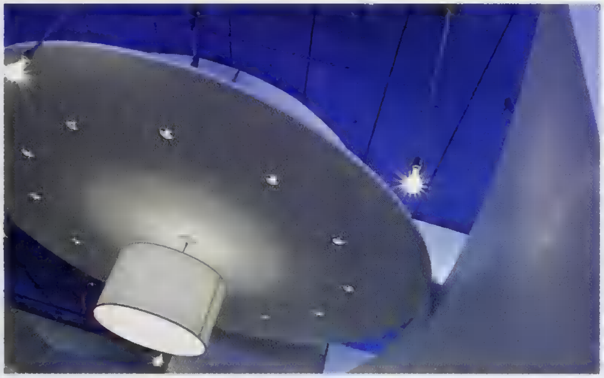
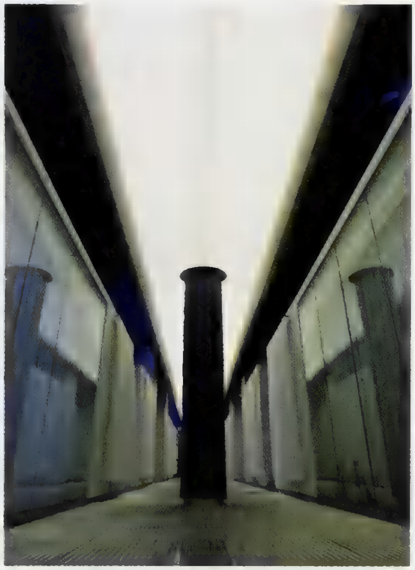
reative Uses

Designers now working in Canada explore light in interior environments: Montreal, a designer raised in Morocco wraps a fashion house in light, and Toronto sees light-filled furniture

he showroom of a denim company is bleached with light



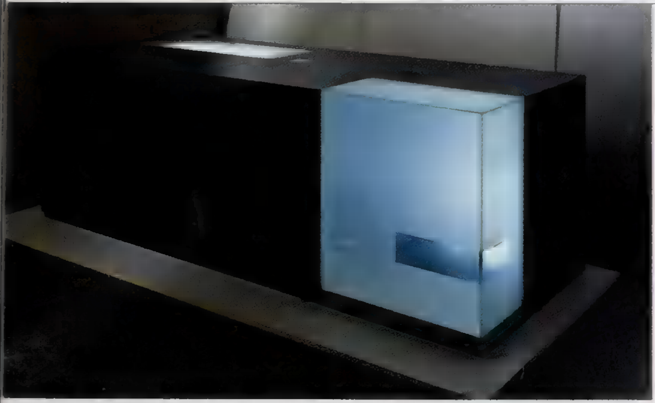
Indigo blue jeans cue the color of the ceiling at Buffalo Jeans in Montreal, offset by bright white lighting, like a "3D acid wash."



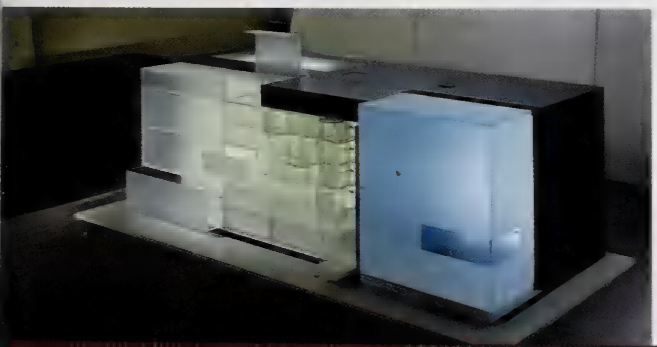
ntreal-based architect Jaime zaglo has been fascinated by effects of shadow and light ce childhood. Born in Alcazar, rocco, and raised in Barcelona, in, he grew up watching the play aylight and nightfall amid classic diterranean architecture. Those dhood perceptions continue to rm how he integrates lighting design projects such as the falo Jeans headquarters and wroom in Montreal.

When asked by a friend, cloth- designer David Bitton, to design 13,000-square-foot base of erations for the popular line of ns, the architect knew lighting uld help define his plan. "I saw floor plan as a mega city," he plains. "A place where many ngs happen at once. In some aces people are working, else- here they're walking or examining erchandise."

Bouzaglo envisioned the corridors between offices, design studios, and showrooms as vital passageways connecting people with each other and their environment, "like a paseo or promenade in Spain." Imbuing the main corridor with warmth, fluorescent lighting is camouflaged by translucent white stretch-fabric-covered fixtures suspended from the ceiling. The 8-foot-diameter fixture is lit by 6-foot lengths of fluorescents installed at 6-inch intervals. Reflective metal flooring is a counterpoint to the soft, fabric-covered fixture. An additional run of translucent, fabric-covered lighting is suspended from the ceiling and supported by columns dressed in denim, rising toward the blue-painted ceiling. Bare 150-watt incandescents are suspended individually to recall the past within the modern context. *Leanne B. French*



uminated by fluorescents, *Mr. Grayson's Cabinet of Wonder* teamed a film-aker client with an inventive architect/designer, Johnson Chou.



An illuminated cabinet beckons the curious

Dr. Caligari had his famous cabinet in the classic German film, and now so does Canadian filmmaker John Grayson. Titled *Mr. Grayson's Cabinet of Wonder*, the inventive storage credenza anchors the office of the director/producer's loft, sparking the curiosity of virtually everyone who stands before it. Appearing like a ghostly distant cousin of the black monolith that looms in the landscape at the outset of *2001: A Space Odyssey*, the credenza features a Minimalist black melamine base whose face is infused with mystery via translucent acrylic compartments backlit by fluorescents. Both elegant and functional, the piece, designed by Toronto architect Johnson Chou, incorporates a working light table, computer base, and archival storage compartments of various sizes.

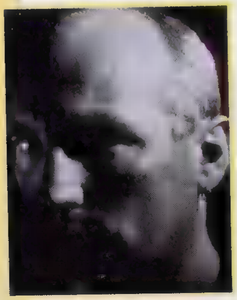
The design challenge for the cabinet was issued by organizers of the Toronto Arts Awards. Part of the prize, which Grayson received, includes a design commission granted to a protégé (younger architect or artist) to design an object or artwork in tribute.

"John collects specimens from around the world that inspire his projects, so the cabinet functions as his personal treasury," Chou says. Also a graphic designer and art curator, Chou here explores the notion of transformation. But the mystery does not end with the light show; the unit's drawers must be opened in sequence from a "secret" starting point. Mr. Grayson's wondrous cabinet requires no lock and key. *William Weathersby, Jr.*

In the City of Light and beyond, Parisian lighting designer **Yann Kersalé** turns acts of illumination into narrative works of art

By Claire Downey

Like a photographer who waits for the perfect play of light and shadow to fall across a building, Yann Kersalé sees electric illumination as an integral part of architecture. True, applied electric light is an artificial enhancement, and often a functional necessity, but with the possibility of becoming much more. "As people sleep less," says Kersalé, "remaining more active and even working through the night, lighting has become more important to defining architectural and urban landscape projects. Illumination can be more than a technical specification; it can tell an expressive story."

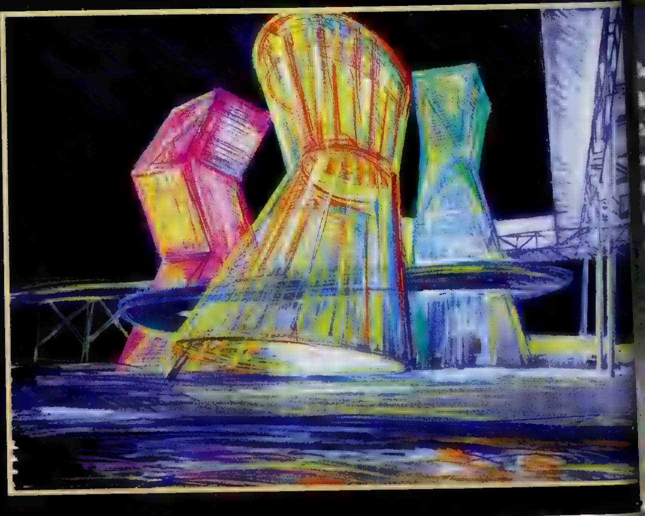


Yann Kersalé

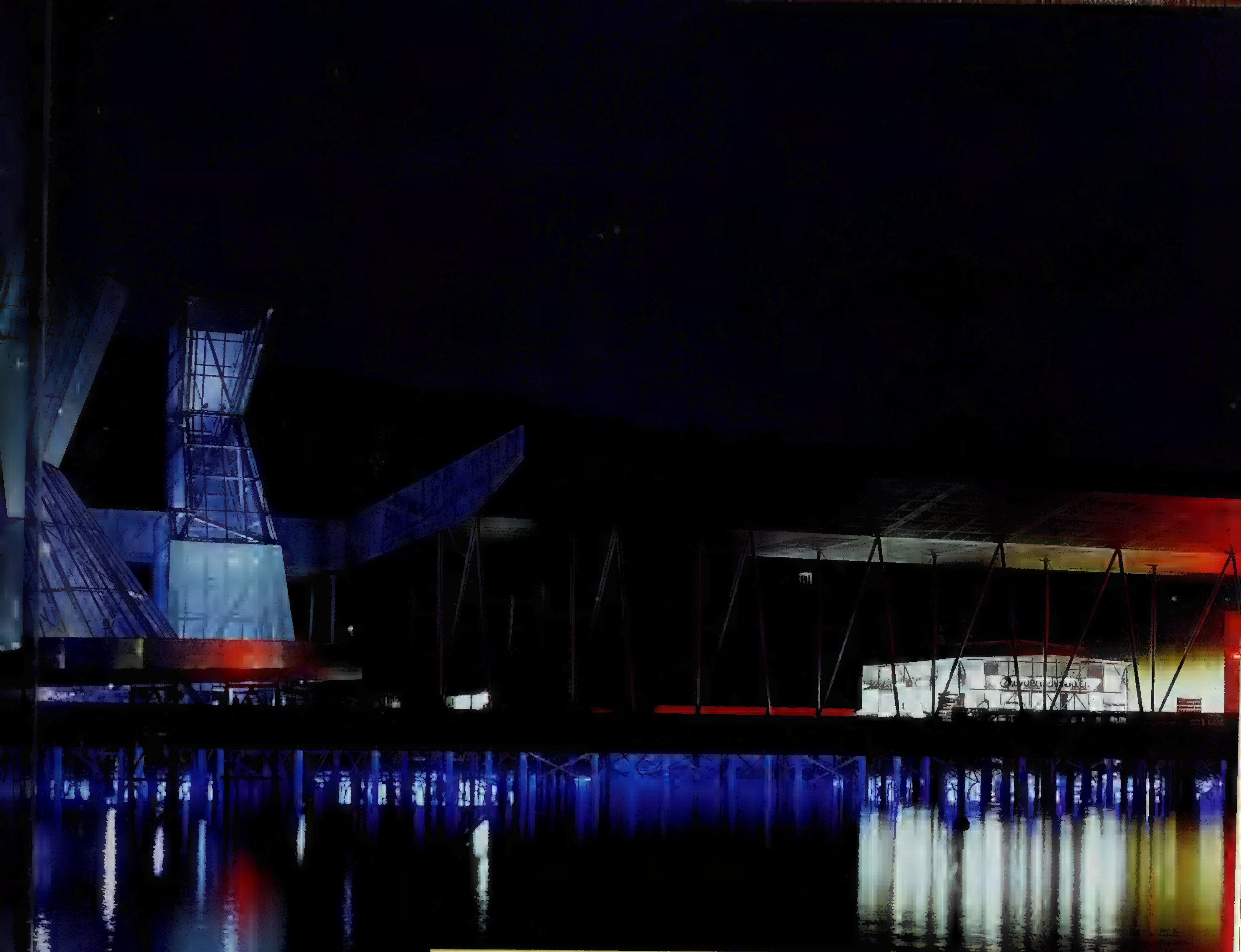
The narrative thrust of Kersalé's work as a lighting designer is often expressed by light that changes, or "pulsates," with the environment. There is a bit of the poet in the 47-year-old Kersalé, as well as sculptor, explorer, and showman—a result of years spent lugging around sound and lighting equipment for several popular French bands. According to Kersalé, he learned the basics of electricity, lighting, and even computer technology "on the road." The technical knowledge that he has mastered has never, he says, been the catalyst of his design work. Yann Kersalé approaches the challenges of working with light as an artist.

Born just outside of Paris, Kersalé has an art degree from the Ecole de Beaux Arts de Quimper, in Brittany. His early school projects already incorporated photographic projections generated with slides and a Kodak carousel. To earn money for school, Kersalé worked on the local docks transferring the night's tuna catch onto refrigerated trucks while immersed in the changing nightscape of the harbor. Years later, in 1991, Kersalé was approached by the city of Saint-Nazaire on the Atlantic coast to help revitalize its industrial port. Among other things, Saint-Nazaire is famous for an enormous, abandoned concrete bunker built by the Germans to house submarines during World War II. Kersalé created a virtual ballet of red and green light—as well as static white illumination—on cranes, silos, and even the bunker, which the city found was cheaper to rehabilitate than to destroy. At Saint-Nazaire today, a computer program collects data during the day, then translates that data into the evening's choreography of light. One element that plays a role in the play of light is

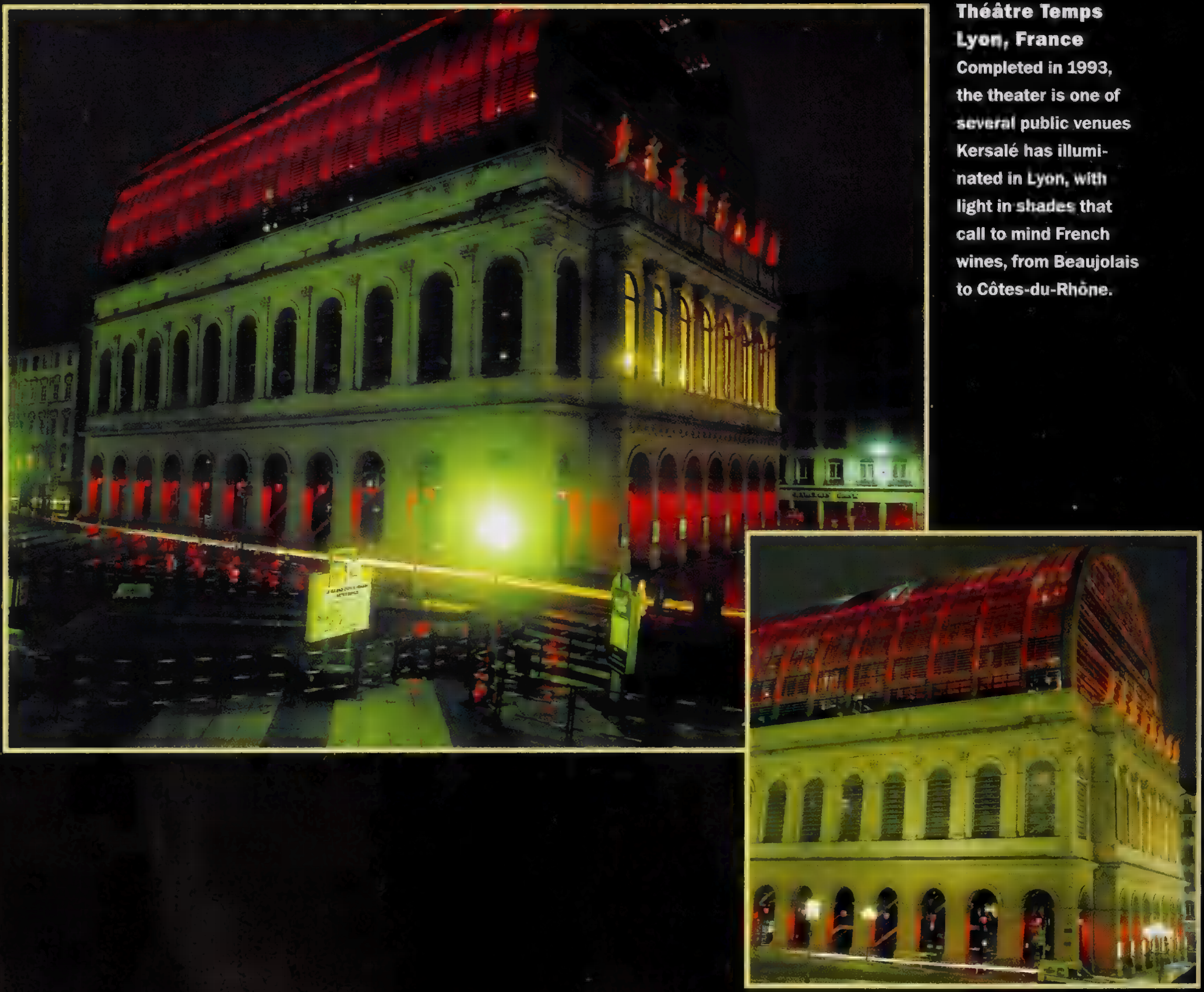
Claire Downey is ARCHITECTURAL RECORD*'s correspondent based in Paris.*



PHOTOGRAPHY: © COOP HIMMELB(L)AU/GERALD ZUGMANN; ILLUSTRATION: COURTESY YANN KERSALÉ



Swiss Expo
Biel, Switzerland
Collaborating with architectural firm Coop Himmelb(l)au, Kersalé washed the metal-mesh towers with computer-controlled spotlights fitted with color changers. Kersalé begins each lighting project by studying the architect's material choices and the site's weather and light conditions. Then he sketches in color.



Théâtre Temps Lyon, France
Completed in 1993, the theater is one of several public venues Kersalé has illuminated in Lyon, with light in shades that call to mind French wines, from Beaujolais to Côtes-du-Rhône.

the ocean itself. As Kersalé describes the process, "a tube was placed in the harbor with a ball floating inside. The ball rises and falls, and so do the light levels." According to the designer, such control technology is readily available, yet it is not often considered when specifying controls for architectural illumination. "The same electric eye that tells a door to open can activate a light source, immediately or hours later," Kersalé says.

The concept of illumination that flows with time, rather than fluctuates in sharp, aggressive flashes, is central to his work, Kersalé says. Such an effect wasn't lost on architect Jean Nouvel, who invited Kersalé to collaborate on the Lyon Opera House, which opened in 1993. Kersalé lit the barrel-vaulted roof in red, a hue that intensifies as the concert hall and the stage fill up. Kersalé, who has known Nouvel for 20 years, is also teaming with the architect on a tower in Barcelona and a new museum of art and civilization to be built along the Seine in Paris.

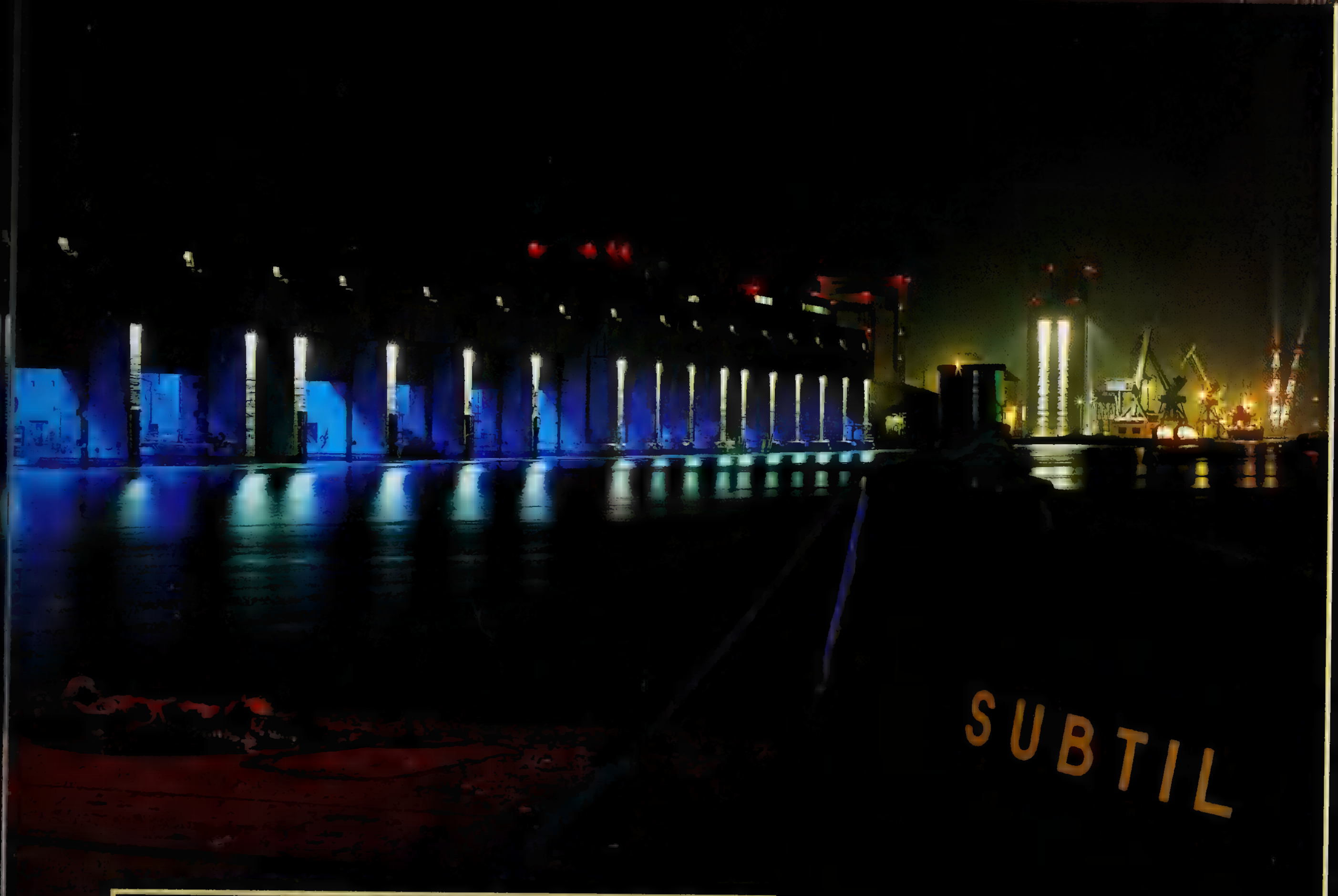
LIGHTING BY KERSALÉ IS INSPIRED BY THE EBB AND FLOW OF TIDES, OR THE CONFLUENCE OF CROWDS AT THE OPERA.

Kersalé's input begins in the earliest design stages of a project, and the end result "should melt into the work of the architect," he says. "It's a process that requires the acceptance of a certain ambiguity in terms of where one person's work ends and another's begins. Yet the architects with whom I work are all established enough in their careers to accept this. We are all working as part of the same family."

For architect Helmut Jahn's Sony Center in Berlin, a project that encompasses restaurants and movie theaters, Kersalé conceived the light as a kind of giant jelly fish, white in the daytime, then coming alive at night with a concentration of color at the center and a fine net spreading out in all directions. The designer also just completed lighting Jahn's postal headquarters in Bonn.

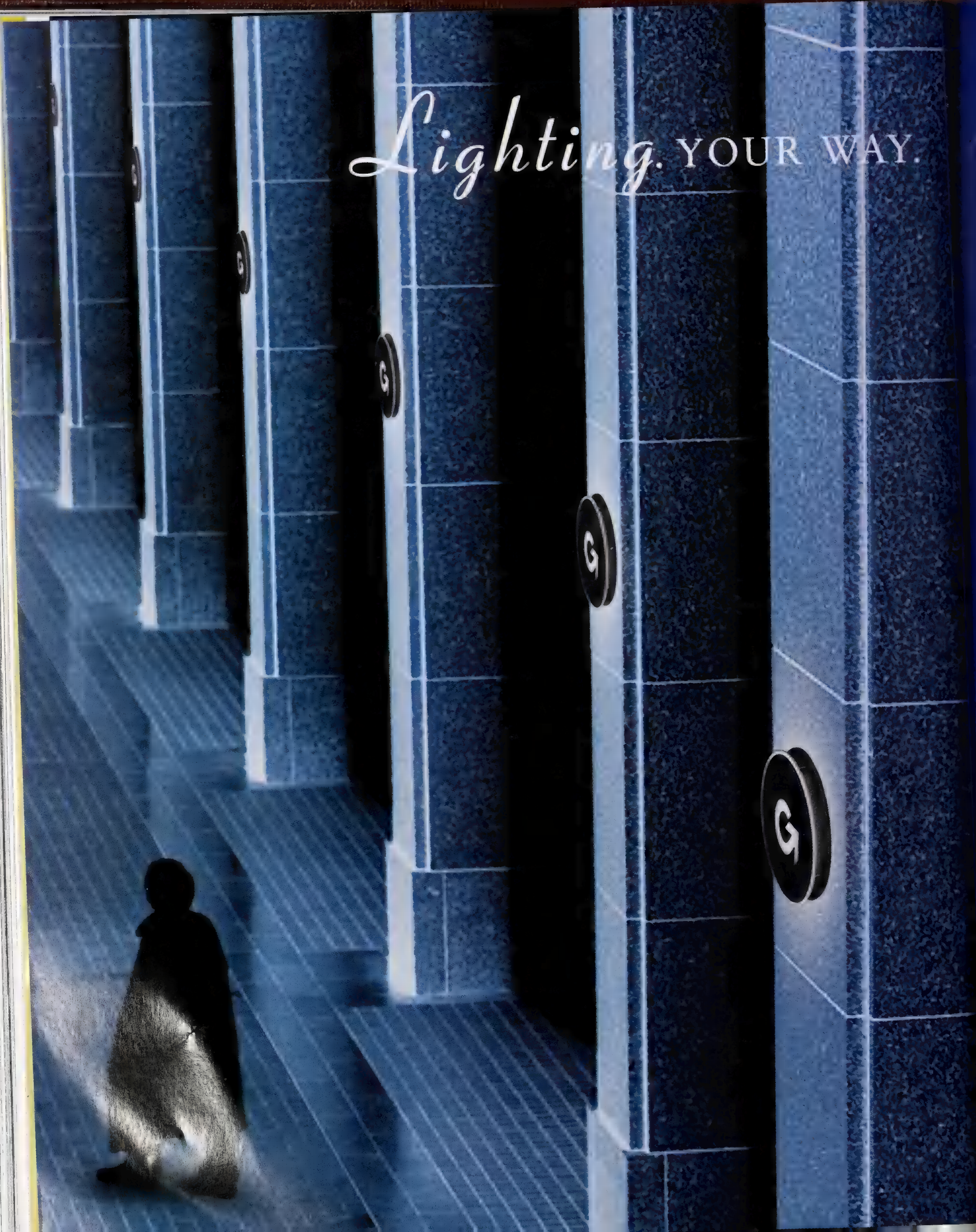
Another project, which opened last summer, is the Arteplage towers designed by Coop Himmelb(l)au for Swiss Expo 2002. The light-filled, metal-mesh towers are meant to represent "Power and Liberty." Kersalé focused on the transparency of the tower skin until he "felt the towers swelled and waned like a living organism." Kersalé also designed the Expo's street lamps, and settled upon the perfect gray light to lend an ethereal magic to Diller + Scofidio's "Cloud" project at Yverdon-les-Bains.

Currently Kersalé is working on a series of street lamps to line what was once the route of kings, winding through the Paris suburbs to



Nighttime Docks Saint-Nazaire, France

A project begun in Kersalé's hometown in 1991, the *Nuit des Docks* illuminates the waterfront where submarine bunkers abandoned by the Germans after World War II remain standing. Many light sources—halogen, metal halide, and airstrip runway lights—graze metal towers and cranes. Lighting is choreographed in synchronicity with the flow of tides.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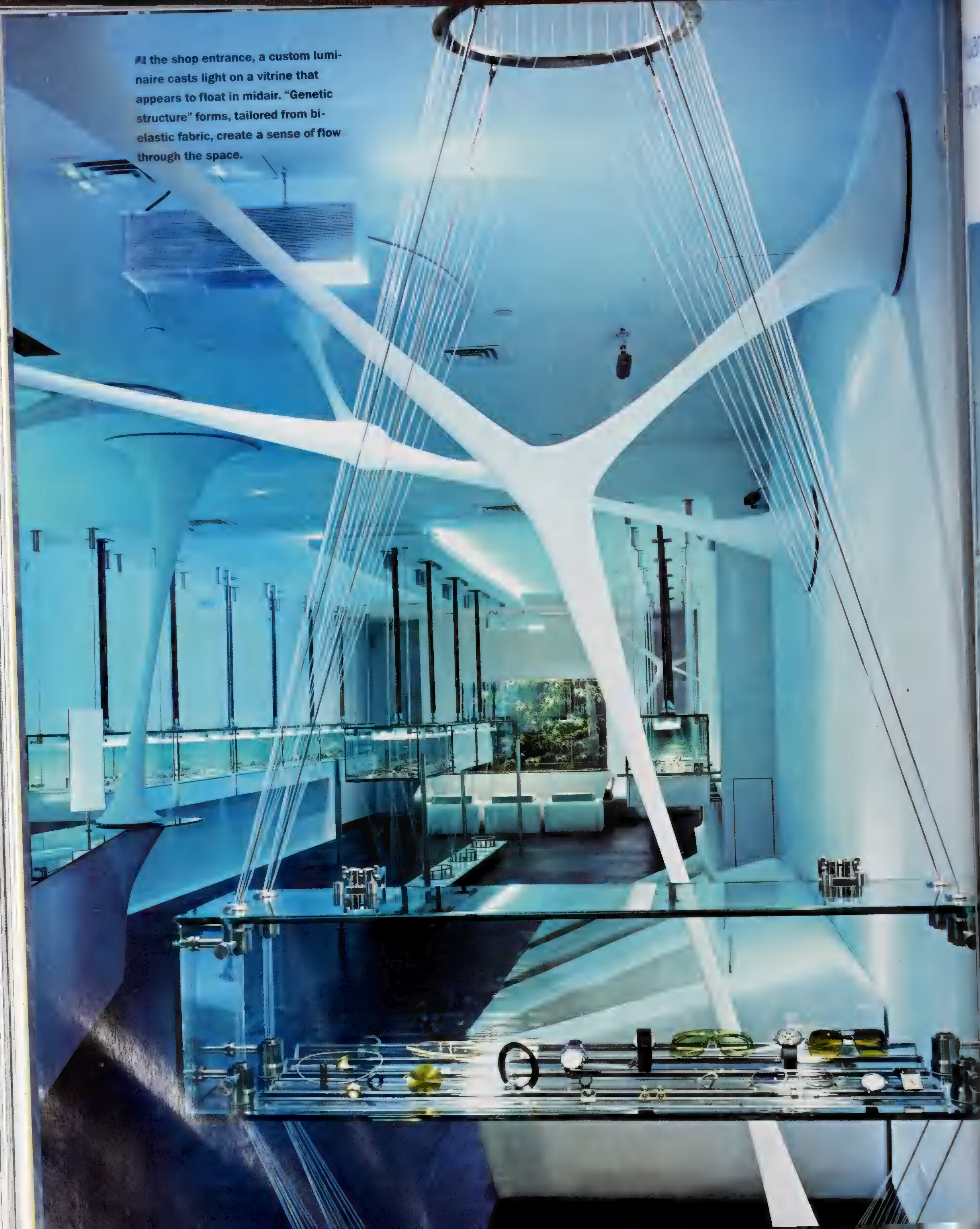
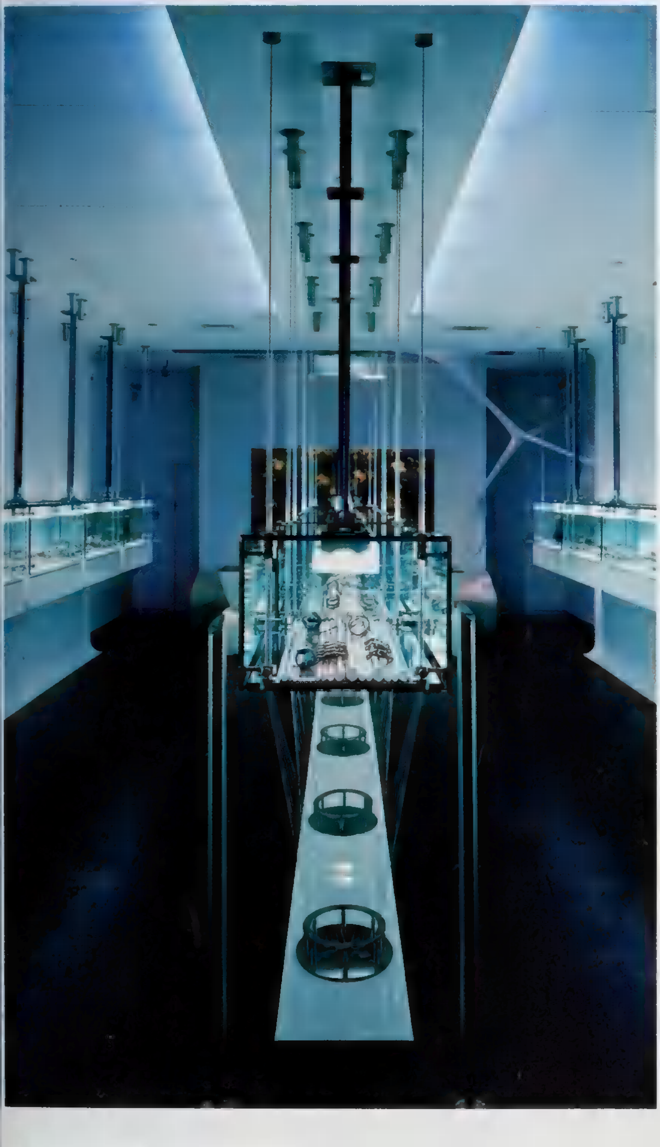


At the shop entrance, a custom luminaire casts light on a vitrine that appears to float in midair. "Genetic structure" forms, tailored from bi-elastic fabric, create a sense of flow through the space.

Nuanced lighting at **D'Fly** in New York City casts a glow upon jewelry in a sleek setting fit for James Bond



Sixteen custom-designed vitrines are internally illuminated with custom lighting that is dimmable via remote control. The glass panels were fastened with stainless-steel elements to leave a small gap, allowing heat generated by the internal lighting to escape.

By Leanne B. French

Jeff Shi says he approaches his work as a jeweler as "a commitment to design." With the recent opening of D'Fly, his new shop with wife/partner Jennifer Lin in New York's SoHo district, Shi's dedication takes the sculptural form of a glass and steel interior jewel box. Equal parts boutique, art installation, and high-tech showcase, the new store, conceived with the German design firm 3deluxe, elevates the simple act of shopping for accessories into an architectural experience.

"We're not concentrating on brand names," Shi affirms. "We're selling nontraditional jewelry to individuals with an affinity for interesting designs. Buying jewelry should be like buying art."

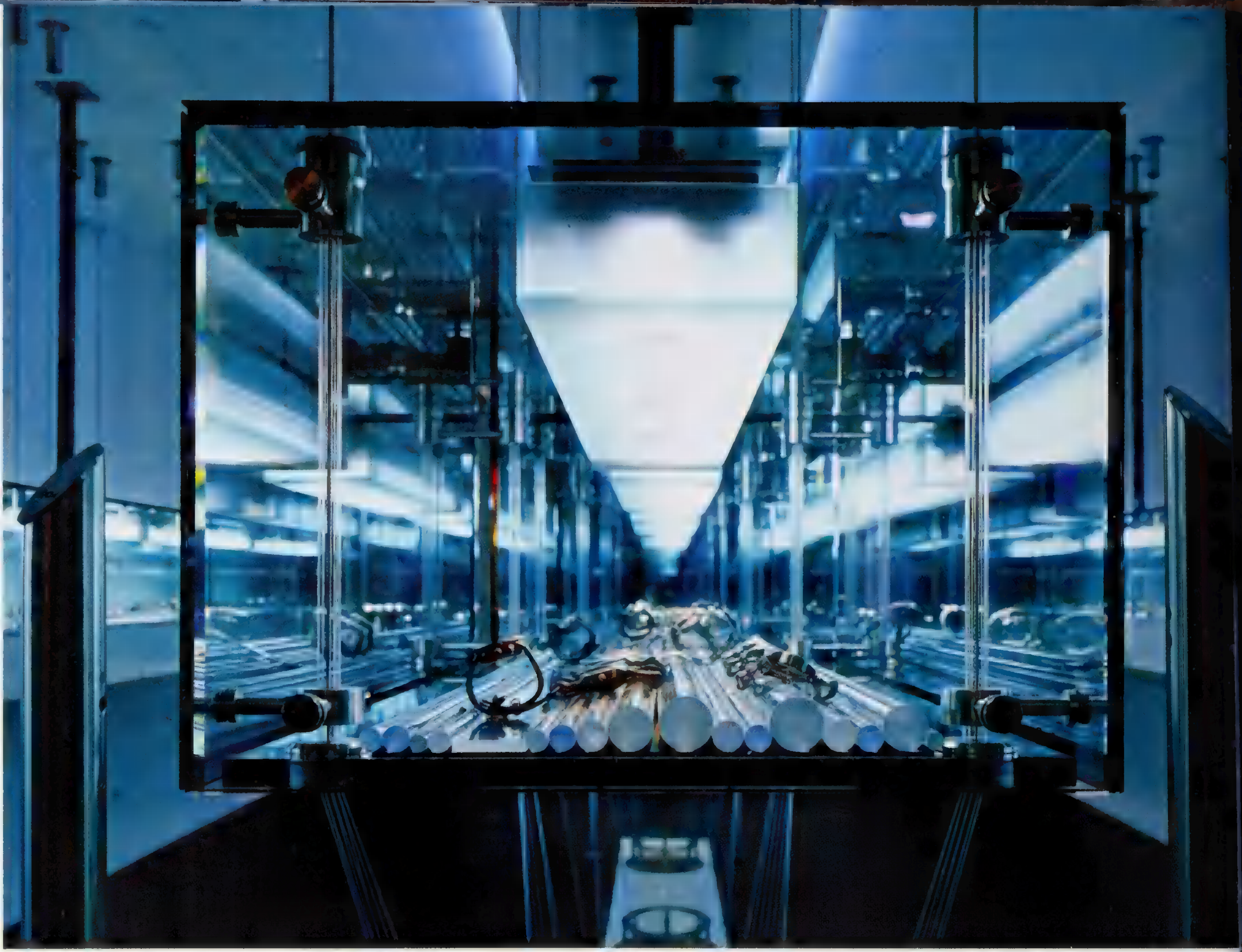
A former designer for Harry Winston, Shi also owns Dragonfly Gallery, an interior design store, and two jewelry galleries in his native Taipei. At D'Fly (shorthand for *dragonfly*), showcasing the jewelry, like presenting a work of art, was paramount, yet Shi resisted the traditional approach of overlit shelves and vitrines. "Standard retail lighting makes the jewelry in cases look different than when it is shown to a customer in daylight," he explains. "I wanted to avoid that standard look, along with the procedure of keeping vitrines under lock and key. I thought it might be interesting if our display cases opened like garage doors."

Designer Nik Schweiger and his team at the avant-garde 3deluxe studio worked with Shi to turn his "garage door" concept into a high-tech design solution fit for a James Bond film. Via remote control, D'Fly staff can elevate 16 custom-made steel and glass vitrines so they appear to float in midair. The technology behind the high-tech magic is a Fluidic Muscle membrane-contraction system, traditionally used by car manufacturers, which was adapted as individual lift systems for each vitrine.

Nuanced lighting works in tandem with the custom display design. Shi sought a high level of lighting control for each vitrine. Although he considered fiber optics, which light his galleries in Taipei, it proved cost-prohibitive for the 2,200-square-foot New York store. Instead, vitrines are lit by a combination of four 50-watt halogen lamps and two 54-watt fluorescent tubes. The lamps were fitted inside custom-made steel and tempered-glass light boxes installed within each vitrine. Both sets of lamps are dimmable to adjust color temperature and lighting levels so that the jewelry maintains a consistent appearance in and outside of the vitrines. To prevent damage to the jewelry from heat generated by

Leanne B. French is a freelance writer and documentary filmmaker based in New York City. She frequently contributes to the quarterly lighting section of RECORD.

Project: *D'Fly, New York City*
Owner: *Yaoer USA—Jeff Shi, Jennifer Lin*
Architect of record: *Kevin C. White Architects*
Designer: *3deluxe—Nik Schweiger, principal designer*
Lighting designers: *3deluxe; OSRAM Lighting Consulting GMBH*
Engineer: *Wolf Elektroanlagenbau GmbH*
General contractor: *Winter Tuffy Construction*



Each vitrine is lit by a combination of halogen and fluorescent lamps fitted inside steel and tempered-glass light boxes (above). Avoiding the use of keys to unlock displays, glass doors can be lifted via remote control (left), using individual Fluidic Muscle membrane-contraction systems.

the lamps, the glass panels of each vitrine are fastened with stainless-steel parts instead of glass epoxy. The design leaves a small gap between panels, allowing heat to escape from the vitrines and air to circulate inside.

Beyond illuminating the vitrines, lighting here also functions as art. "Light showers," custom luminaires designed by 3deluxe, project flickering light patterns that paint the walls at the entry and rear of the store. Beneath the kaleidoscope of light near the entrance, customers are invited to sit on a sofa ergonomically designed with cushions made from Tempur foam, a product originally developed for NASA. The seats mold to the shape of the shopper, as one views the light show and baubles.

Shi and Schweiger extended the use of industrial-grade materials to the recycled rubber flooring, a forgiving surface if jewelry is dropped. The front counter and try-on table are made from wood finished in white lacquer and topped with tempered glass. Hidden within the try-on table is more high-tech wizardry. Three internal lifts raise mirrors

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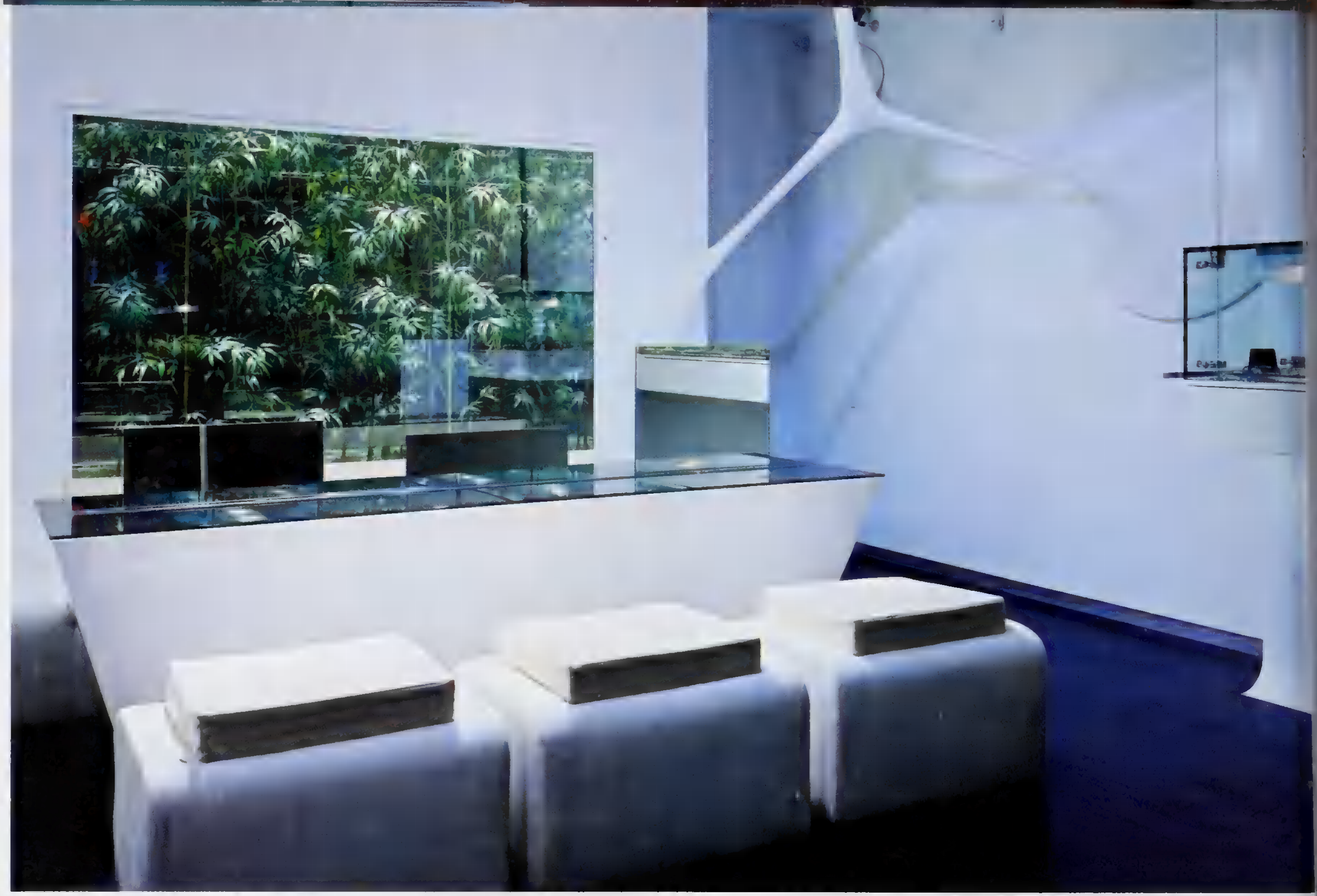
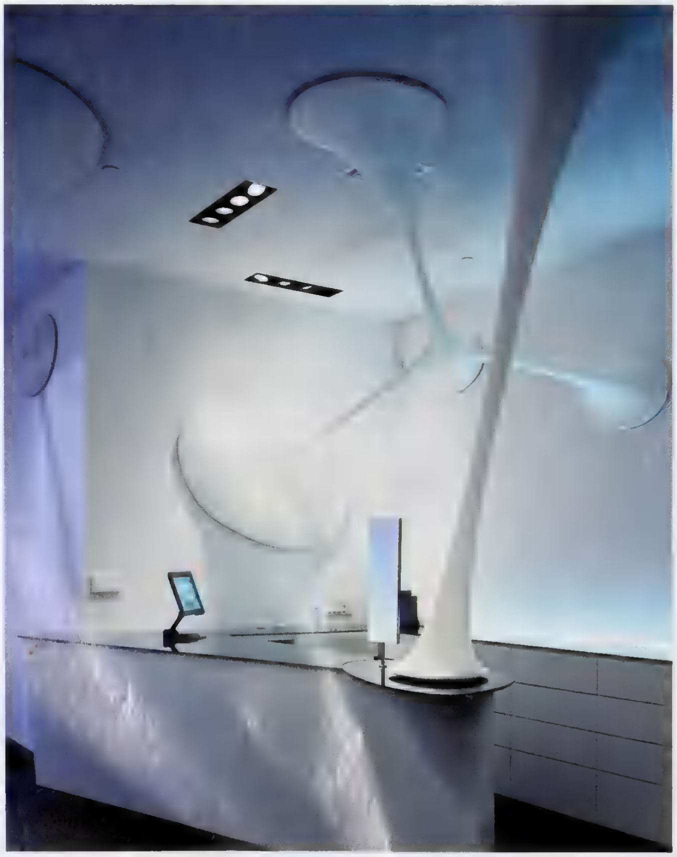




A bamboo garden (above) is a serene backdrop to the high-tech try-on table, which features hidden mirrors that can be raised by remote control. A tailored fabric form intersects the space above the front counter (left), illuminated by recessed track lighting.

via remote control to allow customers to view their jewelry selections. Shi's inspiration: watching the movement of a car's power windows.

Organic-inspired elements, both natural and man-made, balance the austerity of the surroundings. The 3deluxe team's signature "genetic structures," 3D tailored fabric forms, are suspended from the walls and ceiling. The forms follow computer-generated templates that simulate natural growth. And as a nod to his Asian heritage, Shi incorporates his favorite plant, bamboo, as an element in all his shops. At the rear of D'Fly, a Zen-like bamboo garden is set behind commercial glass, which minimizes reflection and is lit by track fixtures. A mirrored back wall creates the illusion of depth and makes the garden appear expansive. ■

Sources

Ambient, downlight, task fixtures: *OSRAM Lighting Consulting GmbH*

Glass: *Glas Schröder (vitrines and counters)*

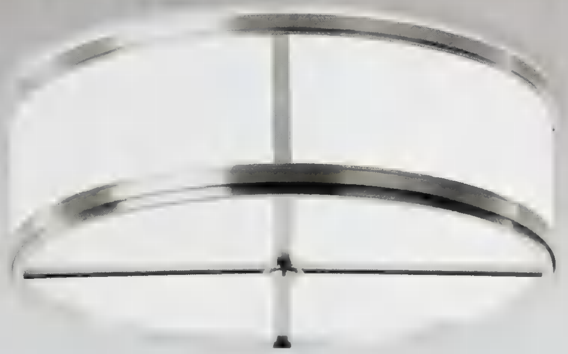
Seating: *GECCO Scene Construction*

Displays, vitrines: *Space4a; Festo AG & Co.*

Woodwork: *Klunderschmid*

Steel: *Steelworks*

www For more information on the people and products involved in this project, go to Lighting at **architecturalrecord.com**.



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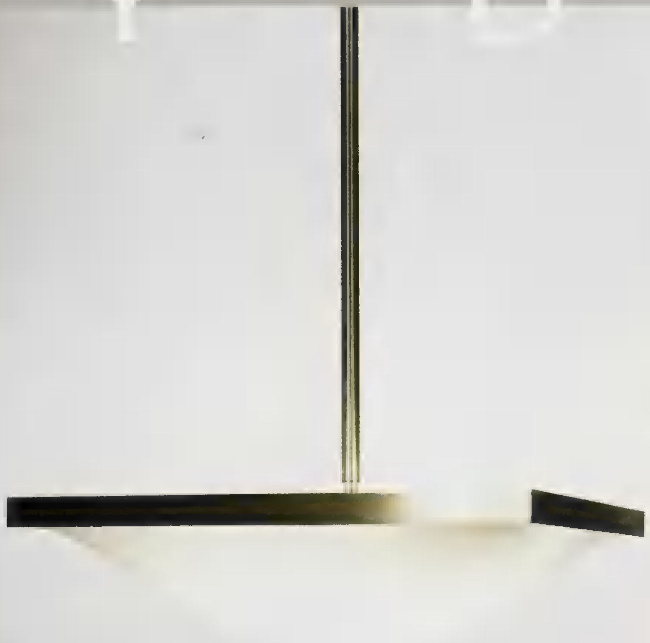
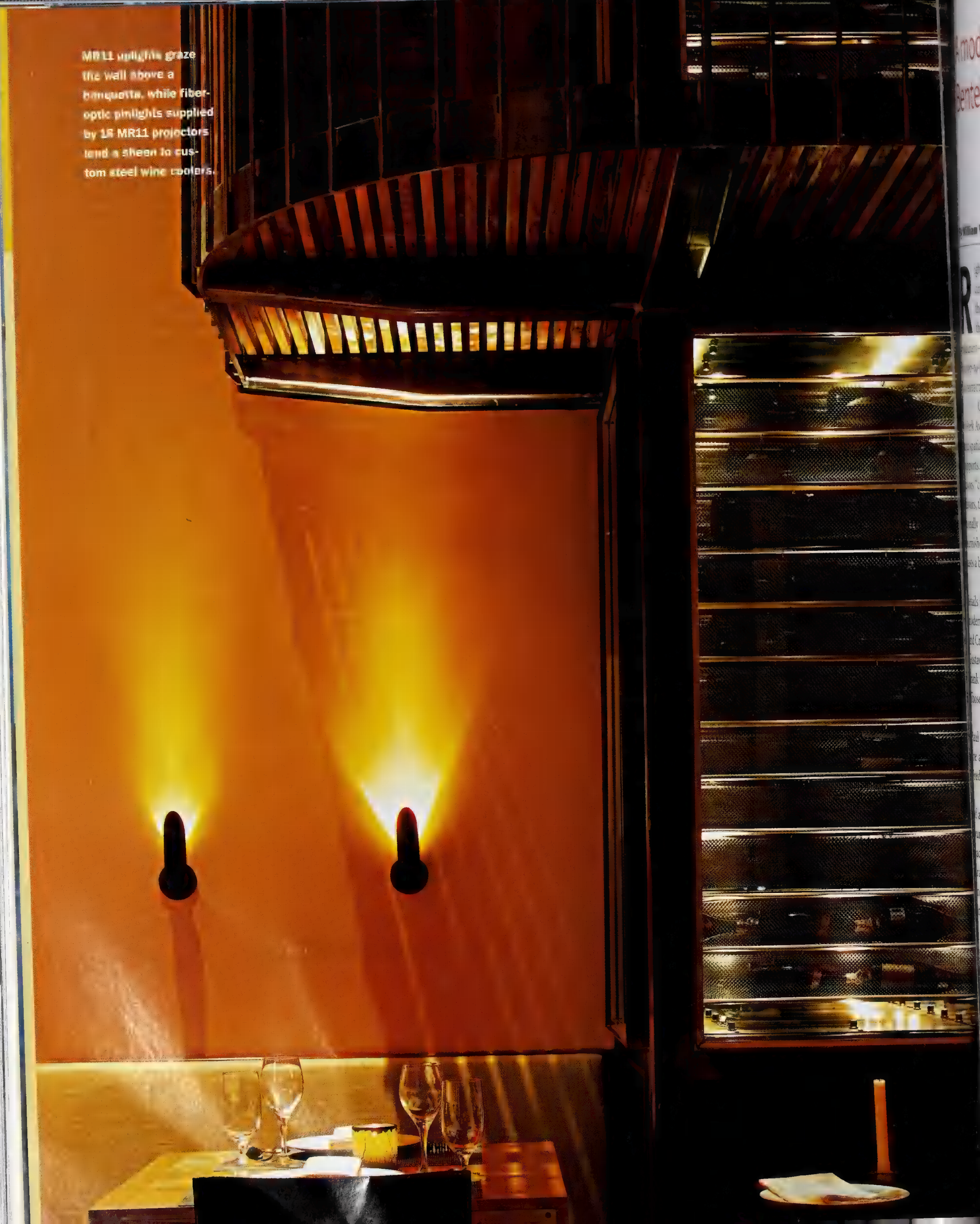


BY BARBARA BARRY [illegible]

QUALITY CONTEMPORARY [illegible]



MR11 uplights graze the wall above a banquette, while fiber-optic pinlights supplied by 18 MR11 projectors lend a sheen to custom steel wine coolers.

A modern-day tandem recalling Greene and Greene, Bentel & Bentel imbue **Craft** with remarkable details

William Weathersby, Jr.

Right up there with form and function, "craft" is a well-worn term circulating within architecture circles. Many architects today laud the craftsmanship of their work and that of their peers, but it's the rare occasion when a 21st-century space—particularly a staurant—showcases a level of careful design execution that calls to mind e top-to-bottom attention to detail championed by *The Craftsman* and CHITECTURAL RECORD at the outset of the last century.

Craft is such a place. Tucked into the quiet block of 19th Street Park Avenue South in New York City, the restaurant is rich in texture d spatial complexity, befitting the multilayered food-service concept it pports. Commissioned by star chef Tom Colicchio, whose culinary style vors "crafting" meals from fresh ingredients and unadorned natural vors, the interior mise-en-scène dovetails nicely with the menu, funcnally and metaphorically. Subtle, layered lighting brings out Craft's rnished wood tones, adds sparkle to its copper and steel fittings, and sts a becoming glow upon both patrons and bountiful meals.

The palette of materials and concentration of custom design tails (here, even the wine bottle coasters are cast bronze) call to mind a odern-day interpolation of handsome work by the leading American Arts d Crafts Movement architects Greene and Greene. Nearly 100 years ago, stav Stickley lauded the Greene brothers' "solid yet picturesque walls, the ank use of structural beams ... and the quiet loveliness" of their interiors. ose lines could have been coined for a recent restaurant review of Craft.

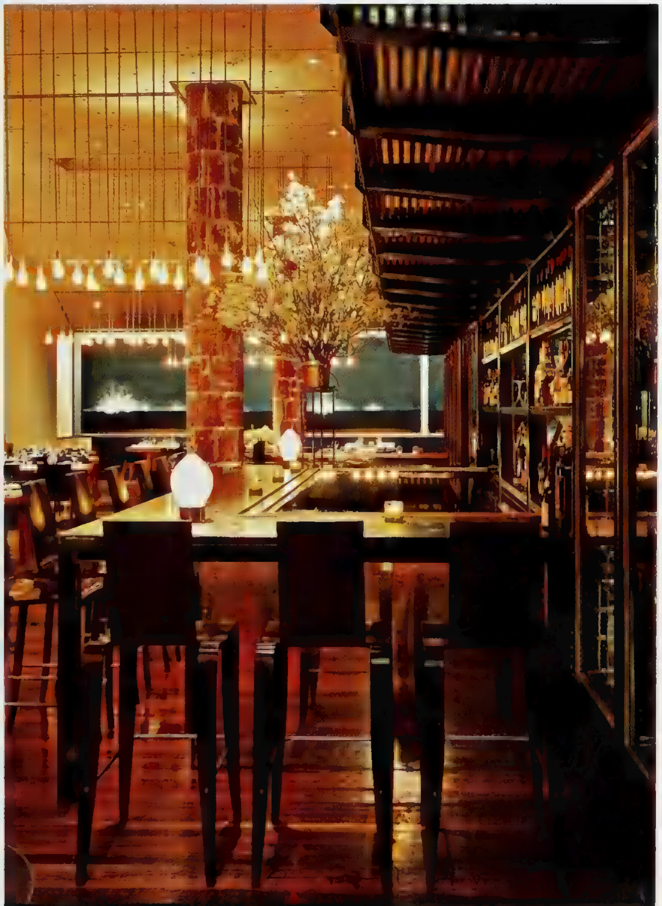
In fact, this project is also the work of a brother team, Peter and ul Bentel. Their design work here recalls Greene and Greene's, yet they e actually the legacy of another partnership, their architect parents, ederick and the late Maria Bentel, who founded the firm in 1956.

"The chef/owner of this restaurant firmly believes that cooking any kind is a craft, not an art," explains Peter Bentel. "He planned to rsue uncomplicated culinary craftsmanship, explore the full flavor of ch ingredient on the seasonal menu, and serve these unadorned on separate plates placed at the center of each table for all to share. His approach otivated us to experiment with a limited set of architectural materials d the most suitable craftsmanship required to join the elements."

The architects addressed Colicchio's requirements for 130 seats, 3,500-bottle wine storage, and a 2,200-square-foot kitchen, spread over 2,975-square-foot first floor and a 2,450-square-foot cellar. Five discrete

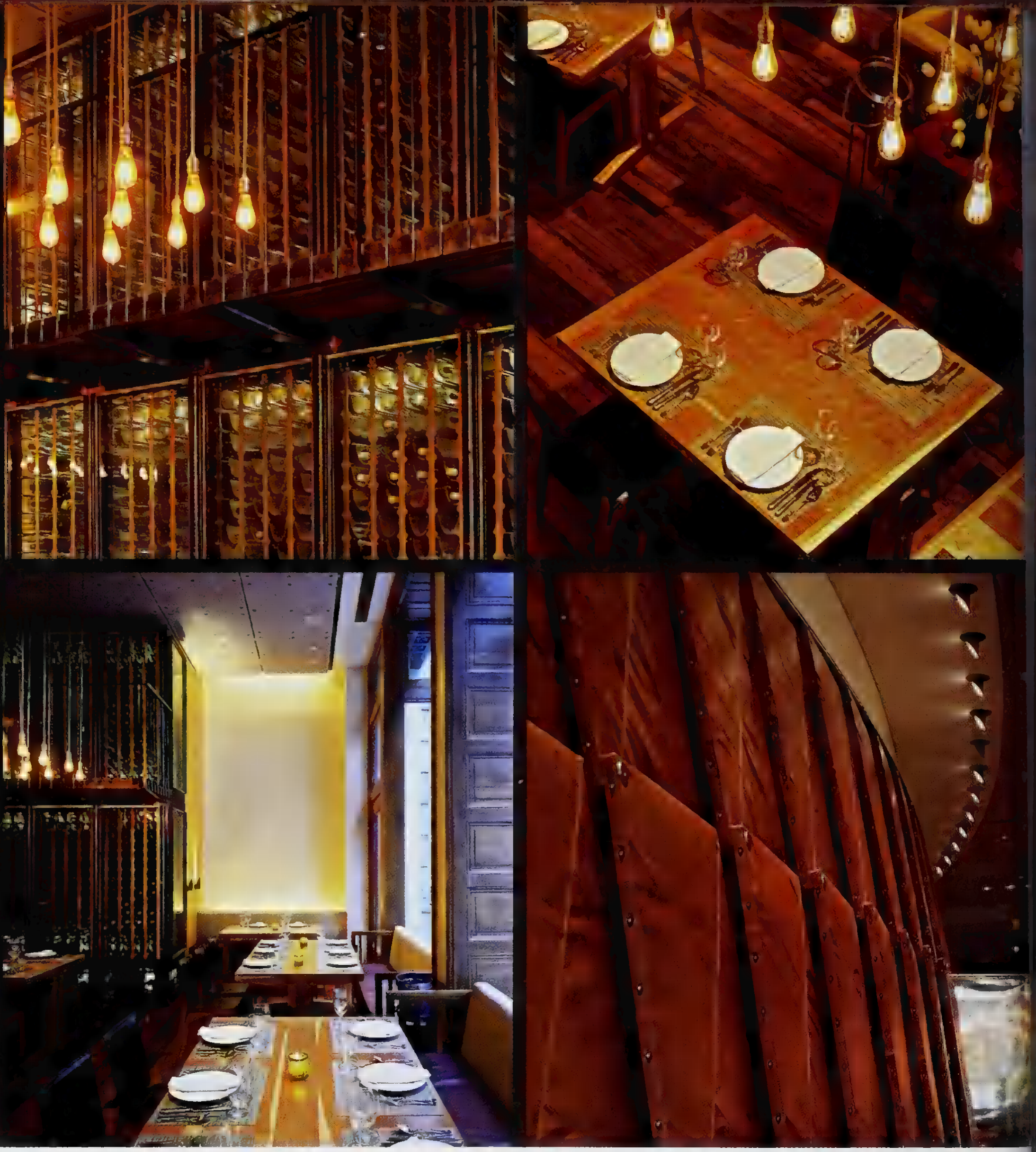
ontributing editor William Weathersby, Jr., recently moved back to Manhattan. e edits RECORD*'s quarterly lighting and interiors sections.*

roject: *Craft, New York City*
wner: *Tom Colicchio, Foodcraft*
rchitect and lighting designer: *entel & Bentel, Architects/Planners—eter Bentel, AIA, principal in charge; homas O'Connor, Christopher Hinchey, Boone Lo, Paul Wise, Raffaele Razzano, project team*
Electrical engineer: *Altieri Sebor Wieber*
General contractor: *Jadum Construction*



Craft is the reworking of the wreck of a former department store built in 1886 in what was then called the Ladies Mile shopping district, which more recently was a warehouse/copy shop. Lighting includes a layering of incandescent and fiber-optic sources.

Suspended Tesla lamps give Craft a warm, ambient glow. (Nikola Tesla was a contemporary of Thomas Edison's whose early work with incandescent lamps was overshadowed by Edison, the more publicity-savvy inventor.)



The geometry of the phalanx of Tesla lamps works well against the steel grid of the wine coolers, and above the rows of wood tables (top left and right). The curved, leather-paneled wall is lit with 500-watt MR16 narrow-flood spots (bottom right). A side wall is illuminated at top and bottom by recessed striplights (bottom left).

elements define the space: a rectilinear steel and bronze wine vault, a curved Brazilian walnut-and-leather-paneled wall, an expansive oil-on-canvas triptych, existing terra-cotta-clad columns, and bare, amber-hued Tesla bulbs grouped as chandeliers. These elements create a progression through the 14-foot-high room, "a spatial compression and release," as the Bentels call it, that provides varying degrees of intimacy for diners while preserving the feeling of a communal "single-room refectory" that the proprietor envisioned. As patrons feast upon Colicchio's banquet, their sensual appreciation of the surroundings deepens. The cold-steel rigidity of the two-story wine vault accentuates the warm, curved softness of the leather-paneled wall facing it. The rough, matte texture of the [illegible] fiber ceiling panels intensifies the reflective surface of the bronze [illegible] and column capitals. Every surface is lit to showcase artisanry.

All furnishings and fittings, from cherry dining tables to bronze bathroom sinks, were designed to celebrate their materials and straightforward construction. The absence of any protective coating (other than beeswax) on any surface promotes their natural ability to age with grace.

With such a wealth of detail, how can lighting seem like much of the story here? That seems to be one of the Bentels' main accomplishments. Though the lighting appears simple and functional—with the array of exposed filament lamps marching through the space—the layered lighting plan is actually rather sophisticated and complex. More than 512 fiber-optic cables light the custom wine cooler alone, while halogen uplights and downlights team with striplights and floods to counterbalance the amber-hued ambient chandeliers. "Craft," it appears, can also describe the workmanship that is required to orchestrate the essential, experiential design element called light. ■

Sources

Downlights: *Prescolite; Hess America; Lightolier*

Recessed sconces: *Engineered Lighting Products*

Surface sconces: *Modular*

In-floor uplights: *Designplan*

Recessed art lighting: *Alkco*

Exterior downlights: *Ardee*

Striplights: *Creative Lighting Systems; Starfire; Roberts*

Fiber-optic lighting: *Nouvir*

Custom pendants: *Rejuvenation*

Tesla bulbs: *Aamsco*

Dimming system: *Lutron*

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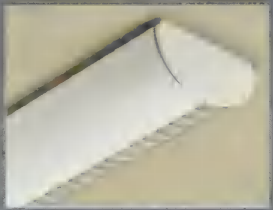

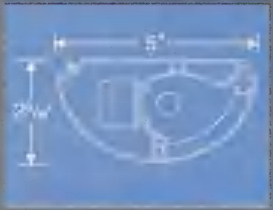

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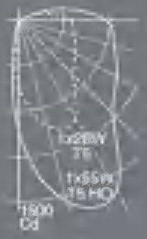

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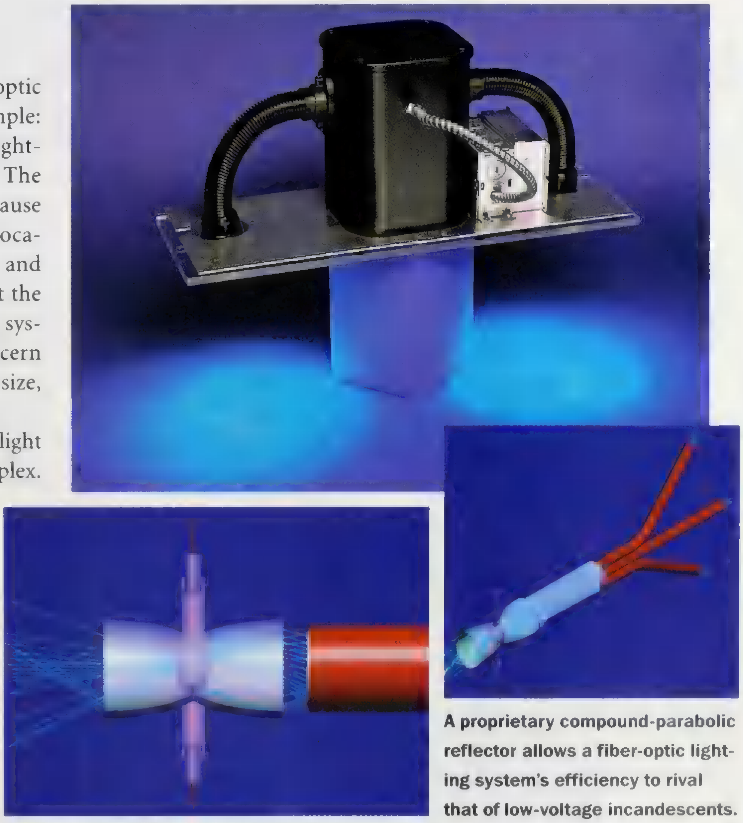
iber-optic lighting's efficiency breakthrough

PAIR OF TECHNICAL INNOVATIONS ALLOWS THE EFFICIENCY OF TWO NEW FIBER-OPTIC PRODUCTS TO IVAL THAT OF TRADITIONAL COMPACT FLUORESCENT AND INCANDESCENT SYSTEMS

Charles Linn, FAIA

Scientists have been trying to develop high-efficiency fiber-optic lighting (FOL) systems for decades. The concept is simple: transmit light from a centrally located lamp through light-transmitting cables and put it where it's needed. The vantages over using individual electric lights are numerous. Because er-optic cables don't conduct electricity, they're safer in wet loca- ns, easier to install and maintain, and fixtures are free of heat and V radiation. Color can easily be changed, and the fixture size at the stination end of the cable can be kept small. Fiber-optic lighting sys- ns have found acceptance where efficiency is not as great a concern dealing with maintenance, difficult wiring conditions, fixture size, d heat.

The technical problems involved in making an FOL downlight ight enough to directly replace one with an electric lamp are complex. e most difficult challenge has been getting more than a small ction of the light from the source lamp into the end of the er-optic cable. Researchers have tried refining the shape of the urce lamp, changing the chemical composition of the fibers, and engineering the large reflectors that focus light into the ends of e cables. A second major problem is the limited amount of light ergy that can be be focused on the end of a fiber-optic cable of e type used for lighting before it begins to melt. Until now, this s meant that it was probably impossible for FOL to ever proach the efficiency of electric lighting, unless fragile, and pro- bitively expensive, glass fiber was used.



A proprietary compound-parabolic reflector allows a fiber-optic lighting system's efficiency to rival that of low-voltage incandescents.

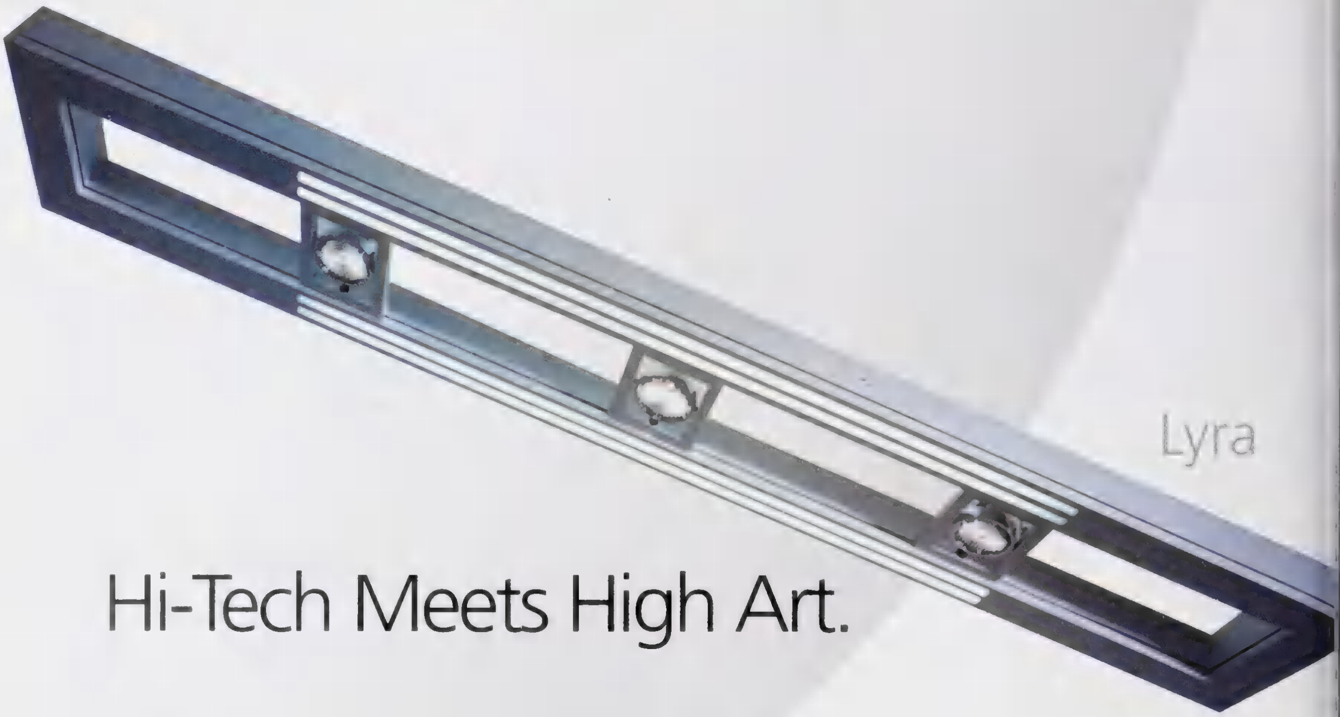
e compound-parabolic collector solution

hn Davenport, who leads a team of scientists at Fiberstars, a Fremont, lifornia–based lighting company, approached the problem in a coun- -intuitive fashion. He was convinced that the solution to the heat and iciency problems lay in defocusing the light and distributing it more enly across the surface of the fiber cable's end. He also felt that there ust be a way to dissipate heat from the light source without sacrificing tical efficiency.

Davenport's team developed two devices. One is a double-ended flector called a compound-parabolic collector (CPC). The device is only percent of the size of the traditional reflectors used by the fiber-optic dustry. The interior surfaces are coated with a special material, which, en combined with the CPC's geometry, helps direct the source light to e fiber in a fundamentally unfocused condition. The CPC uses a special -watt metal-halide lamp that is located between a pair of back-to-back rabolic reflectors (diagram, lower left). Half of the lamp's output is col- cted and redirected by each reflector. Test results showed that the CPC llected close to 97 percent of its source light. The larger FOL reflectors pically in use throughout the fiber-optics industry only collect about 50 rcent of their source's light. From the CPC, the unfocused light enters e second device developed by Fiberstars' scientists, a component known as an integrating rod. This component dissipates enough heat to allow the light to pass through to the fiber cable without damaging it.

The first self-contained, two-light downlighting system (photo, top) to use these components shows that Davenport's theories work. An Independent Testing Laboratories report indicates that Fiberstars' two-light fixture has a system efficiency of over 75 percent, more than double the efficiency of any FOL system ever offered commercially. A more recently developed CPC-based product illuminates six downlight fixtures using the same type of 68-watt lamp (diagram, lower right). This luminaire is capable of powering accent lighting systems that match six 50-watt MR16s but uses 232 fewer watts. While this early example of the six-way system performs far better than any comparable FOL system, its use of first-generation integrating rods keeps its 44 percent efficiency less than the comparable 75 percent efficiency of the two-light system. Fiberstars predicts that improvements in the system will allow it to reach between 50 and 54 percent efficiency early next year.

According to Terry McGowan, who recently retired as General Electric's long-time lighting-applications manager, this system exceeds the efficiency of some traditional compact fluorescent lamps and incandescent systems, not by a little bit but by a lot. He notes, "It's going to change the game as far as those lighting applications are concerned." ■



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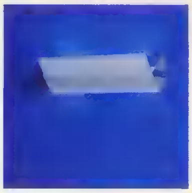
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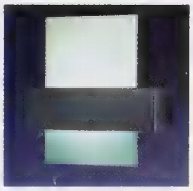
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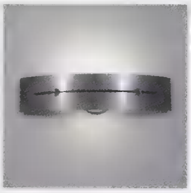
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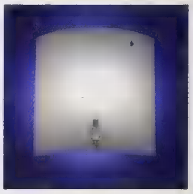
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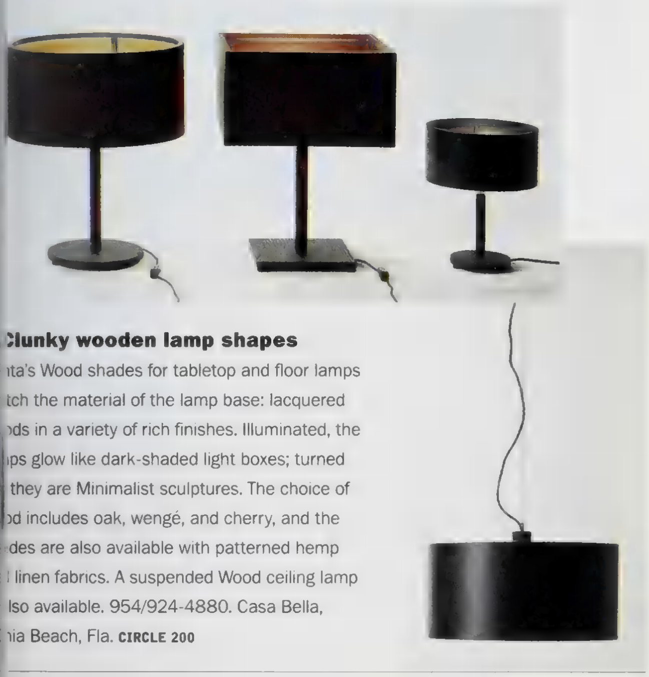
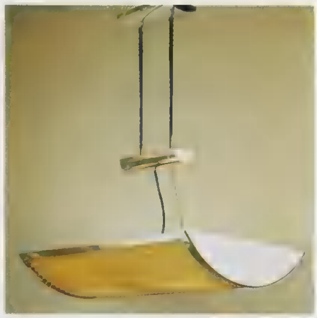


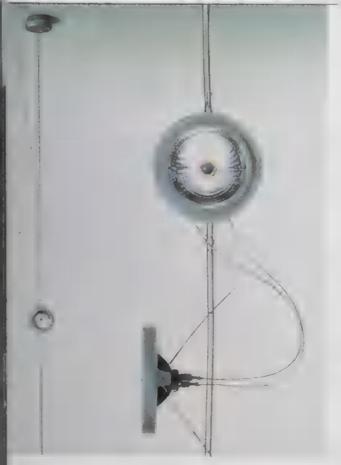
Clunky wooden lamp shapes

ta's Wood shades for tabletop and floor lamps tch the material of the lamp base: lacquered ods in a variety of rich finishes. Illuminated, the ps glow like dark-shaded light boxes; turned they are Minimalist sculptures. The choice of od includes oak, wengé, and cherry, and the des are also available with patterned hemp linen fabrics. A suspended Wood ceiling lamp lso available. 954/924-4880. Casa Bella, ia Beach, Fla. **CIRCLE 200**

Classical pendant

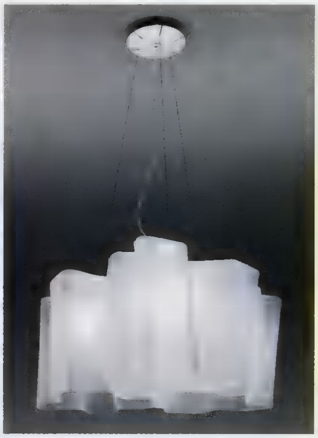


Sunscape pendant's half-moon shape tures a pleated bronze wire cloth or a nless-steel wire-cloth diffuser. The dant shown has a polished chrome sh with a bronze wire cloth. Sunscape lso available as a drop pendant in the ne materials. Both lamps come with andescent or fluorescent lamping. 5/822-1292. Architectural Details, land, Wash. **CIRCLE 203**



◂ Sliding spotlight

The Bungee lamp features a transparent ceiling-mounted cable with a low-voltage transformer suspended from it. The lamp is protected by an anodized aluminum and polycarbonate casing. The actual light consists of a polycarbonate ring fitted with steel springs that allow it to slide and rotate, and a halogen bulb with a narrow beam. Bungee has a foot-operated on/off switch. 39/0423-4848. Fabbian Illuminazione, Treviso, Italy. **CIRCLE 204**

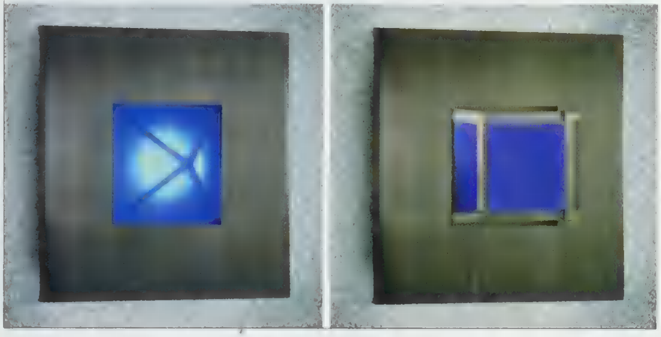


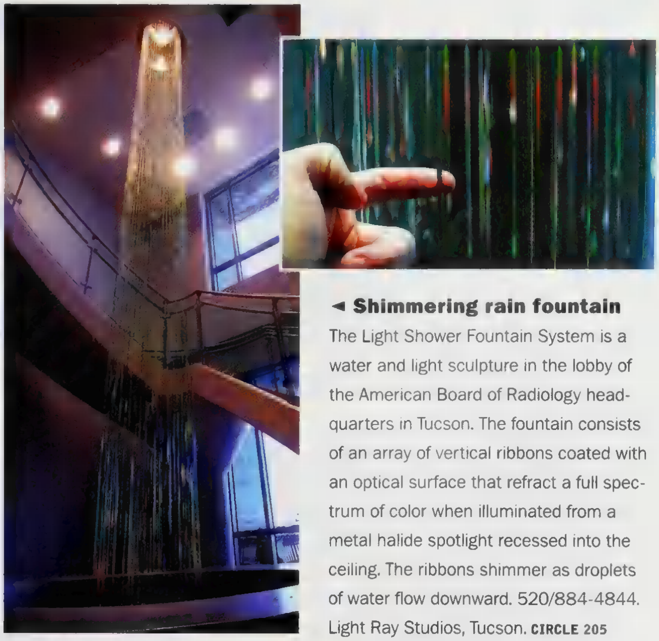
◂ Billowing glass

The free-flowing form of the Logico light fixture could be mistaken for fabric, but it is actually glass with a satined crystal finish. Shown is a combination of three single fixtures, with a chandelier/curtain effect. Logico offers a table, floor, ceiling, or suspension model. Michele De Lucchi was inspired to design Logico by the translucent weightlessness of clouds in the sky. Supporting cables are required, however, and come in stainless steel. 631/694-9292. Artemide, Farmingdale, N.Y. **CIRCLE 201**

▾ Plane of light

Plane, a 6" square casting, is only 1.9" deep and mounts directly to a 4" octagonal junction box. The perimeter glow effect, which provides the illusion that the plane is floating, is achieved by mounting linear LED strips within a clear polycarbonate back plate. The light can be used outdoors for a building or bridge, or as a step light, wall sconce, or signage. 847/626-6000. io Lighting, Skokie, Ill. **CIRCLE 202**





◂ Shimmering rain fountain

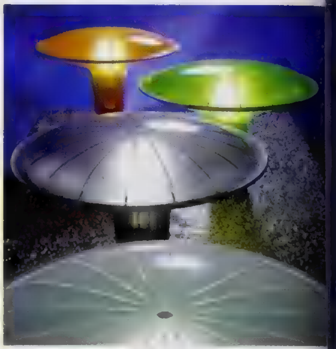
The Light Shower Fountain System is a water and light sculpture in the lobby of the American Board of Radiology headquarters in Tucson. The fountain consists of an array of vertical ribbons coated with an optical surface that refract a full spectrum of color when illuminated from a metal halide spotlight recessed into the ceiling. The ribbons shimmer as droplets of water flow downward. 520/884-4844. Light Ray Studios, Tucson. **CIRCLE 205**

Lighting Briefs

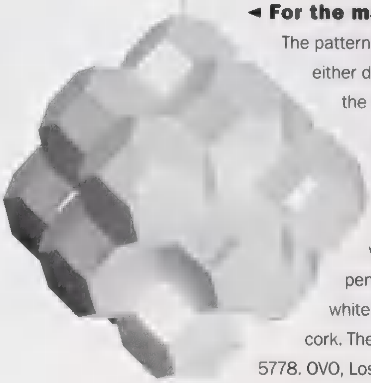
► Mite-y large light

Don't be fooled by the size of the fixtures shown here; these floor lights from Foscarini are actually 6' tall. Illuminated from the halfway point up, the Mite housing gives spaces a strong vertical emphasis. The fiberglass fabric material with a carbon thread starts opaque at its base and graduates in degrees of translucence to reach 100 percent light at the opening on top. Resembling overgrown champagne flutes, these lights are functional sculptures that illuminate a full 360 degrees—a feature also found in Supernova, a spherical pendant fixture also available from Foscarini. 800/713-2182. North American Light Spectrum, Danbury, Conn. **CIRCLE 206**

► Pod lights for the future



The Pod lens collection includes a ceiling, floor, and table fixture. Designed by Ross Lovegrove for either indoor or outdoor use, the injected molded polycarbonate lamps feature prismatic sides and a choice of muted colors, including sage green, sand, and gray. The color is resistant to ultraviolet rays and the electric cable is sheathed in neoprene. 212/989-6265. Luceplan USA, New York City. **CIRCLE 207**



◄ For the mathematician

The patterns in lighting fixtures from OVO are either directly observed in nature or found i the work of mathematicians, engineers, or scientists. The form of Scott Winslow's Archimedean pendant is based on a fractal iteration of the truncated octahedron—15 individual octahedra form the complete pendant. The pendant is available in white PETG (shown), wood veneer, or cork. The overall diameter is 28". 917/741-5778. OVO, Los Angeles. **CIRCLE 208**

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Lighting Briefs

◄ Full of energie

The Limit cylindrical wall sconce features a housing that can be rotated 360 degrees within its rectangular base to adjust brightness. An optional tempered-glass shielding is easily added or removed to adjust light. Limit has less than a 4" recessed depth and is fully ADA-compliant. The Pen/Pendel line is available in single-, double-, or triple-head versions and features stepped specular reflectors to control brightness. The larger Pendel shares Pen's industrial look and may be specified with either compact fluorescent or metal halide lamping. 720/963-8055. Energie, Lakewood, Colo. **CIRCLE 209**

▼ 19th-century streetlights

Hinkley offers outdoor lantern families made of 100 percent cast aluminum in a finish range that includes forest green, gold, bronze, and pewter. They also offer a solid brass grouping with a variety of finishes, a full line of interior lighting including chandeliers and bath fixtures, and a new line of bollards. 216/671-3300. Hinkley Architectural, Cleveland. **CIRCLE 210**

▲ Stone cold shades

Alfa's Quick Jack low-voltage pendants are now offered in natural onyx shades including white marble, natural amber, and natural stone green. All of the company's fixtures have the flexibility for various track and system configurations, with a wide choice of forms, styles, and decorations. 415/346-8181. Alfa Lighting, San Francisco. **CIRCLE 211**

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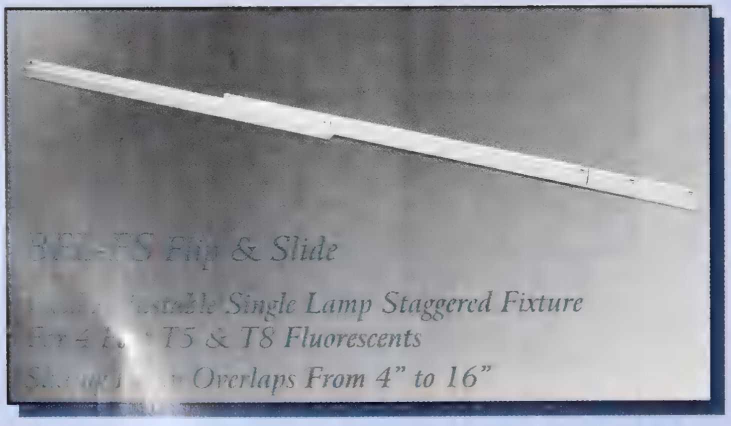

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The Ceramic Tiles of Italy Design Competition 2003 is a special awards program sponsored by Assopiastrelle, the Association of Italian Ceramic Tile Manufacturers, and the Italian Trade Commission to recognize excellence in the design and installation of Italian ceramic tile. North American architects and interior designers are invited to submit commercial/institutional or residential projects featuring Italian ceramic tile. Submission Guidelines Entries may be submitted for projects completed between January 1, 1998 and February 1, 2003. Projects depicting domestic and international new construction and renovation are eligible. Completed submissions must be received no later than February 7, 2003. An international jury of design professionals will judge entries. One winning project in each category (commercial/institutional and residential) will be awarded a $5,000 check during Coverings 2003 in Orlando, Florida, March 24-27, 2003. Visit www.italiatiles.com or www.italytiles.com for complete guidelines and to see previous award recipients. For further information call 718-783-3160 or email us at tileinfo@newyork.ice.it

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New Products

The gates, screens, railings, door hardware, and sculpture shown here are just a few examples of the possibilities of **architectural metalwork**. Whether an architect is looking for a partner to reproduce cast-metal ornamentation or to create modern pieces in **bronze, iron, aluminum, or stainless steel,** there is no doubt that a skilled metal craftsman can have a great influence on a project's success. *Rita F. Catinella*

rm restores and reproduces architectural cast-metal ornamentation

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s been restoring and repli-
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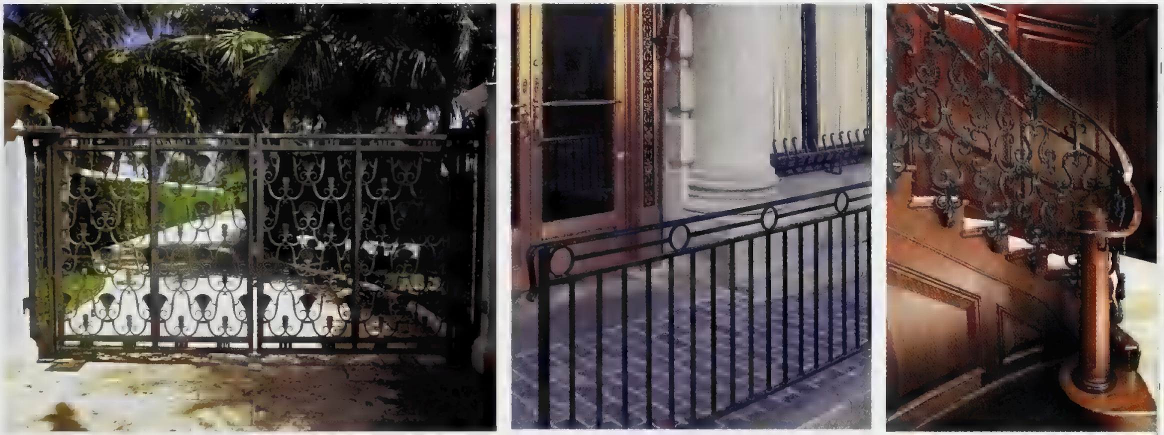

Bronze entrance gates, Palm Beach, Fla. (left); bronze canopy entrance, Providence (middle); cast-iron railing, N.Y.C. (right).

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of cresting, gates, canopies,
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d mailboxes.

For a recent project, the firm worked with Smith Architectural Group of Palm Beach, Florida, to design a pair of bronze entrance gates and a service gate area for a Palm Beach private residence. For the Union Trust Building in Providence, the firm worked with Granoff Associates of Providence to design a cast-bronze canopy for the building's entrance. For another project, they worked with Sciami Construction of New York to design a 40' long, cast-iron railing and an 81' long, mounted steel railing with a wood cap for the Invest Corporation's corporate office building in New York City. 800/225-1414. Historical Arts & Casting, West Jordan, Utah. CIRCLE 212

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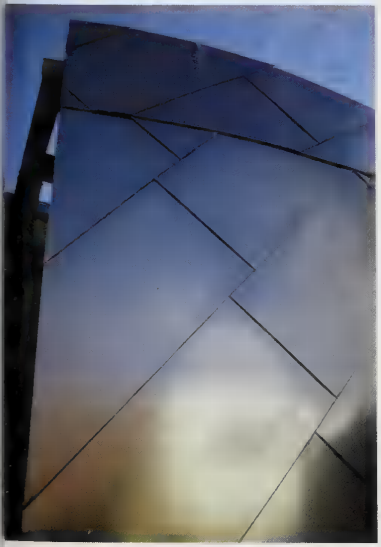
rom shingles to sculpture: high-profile architectural metalwork



IT's new lab will feature metal shingles.

A. Zahner Company produces custom architectural and ornamental metalwork for commercial and institutional projects. In collaboration with Karas & Karas Glass Company of Boston, A. Zahner is providing the metal and glass exterior sections of MIT's new Frank Gehry–designed artificial intelligence laboratory, the Ray and Maria Stata Center. A. Zahner is fabricating two different shingle types on the project; the substructure will be made in Kansas City (with the window boxes built right in) and the complete assembly will then be shipped to the job site and installed. A. Zahner also fabricated a sculpture in the Issey Miyake store in Tribeca for Gehry and for Gordon Kipping. The sculpture has a titanium skin suspended from a steel subframe with a custom-made, stainless-steel articulated mounting bracket.

A titanium-skin sculpture for a Tribeca store.

The firm is currently working on an array of projects with high-profile architects, such as the Austin City Hall and Tacoma Museum of Art by Antoine Predock; a stainless-steel-skin system for the Lake Whitney Water Treatment Plant by Steven Holl; an aluminum-plate system with a blackened finish for Cincinnati's Rosenthal Center for Contemporary Art by Zaha Hadid; the de Young Museum in San Francisco (which features a copper roof and custom wall-panel system) by Herzog & de Meuron; and the Modern Art Museum of Fort Worth and the Pulitzer Foundation for the Arts, in St. Louis, by Tadao Ando. 816/474-8882. A. Zahner Company, Kansas City, Mo. CIRCLE 213

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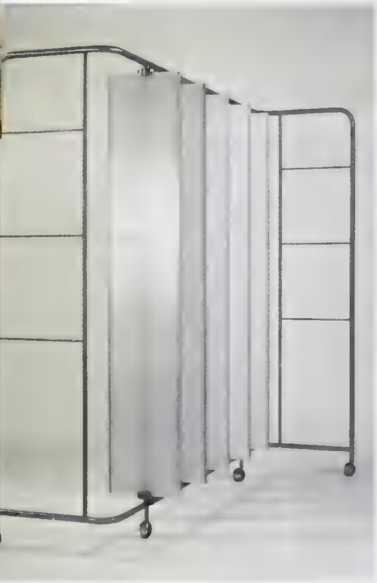
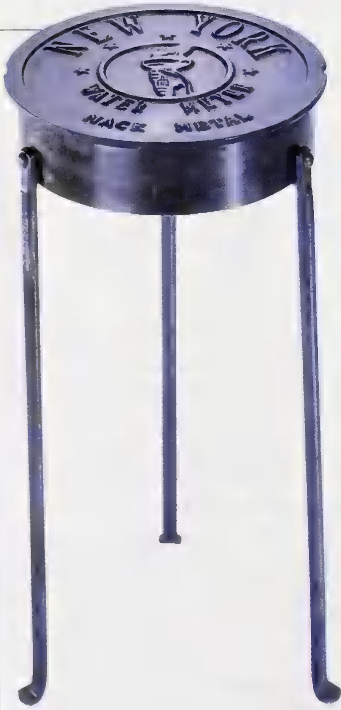


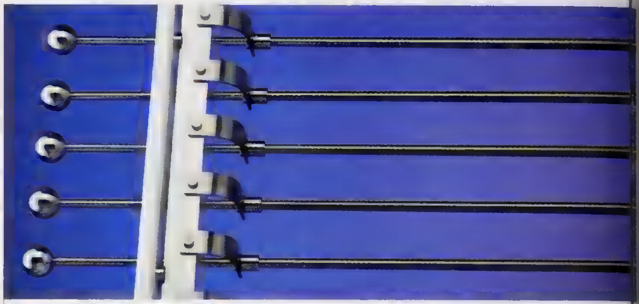
► Designing for the real world

Featured on MTV's *The Real World*, the Veyko pivoting and rolling screen (right) has stainless-steel and translucent polycarbonate panels that rotate in unison. The 6'6" tall, freestanding screen can be used as an office divider, sunscreen, or privacy partition. Veyko's hand-polished metal finish complements wood, glass, stone, and textiles. In addition to designing and producing furniture pieces, Veyko is also a high-end metal fabricator and design firm; a balcony they designed is shown above. The Philadelphia-based firm has also recently completed retail fixtures for Barneys New York. 215/928-1349. Veyco, Philadelphia. **CIRCLE 214**

► Screens and covers

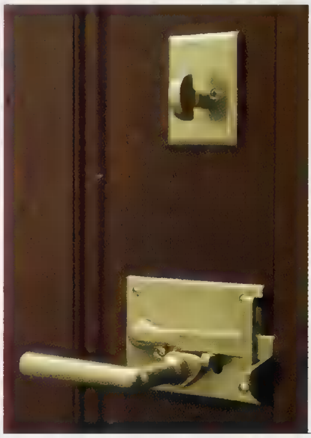
The third in a collection of city-themed Valve Cover Tables, New York joins San Francisco and New Orleans in recreating the look of these long-lost covers, which guarded the access holes to water and gas valves and meters beginning in the mid-1800s. Newly introduced lines of fire screens include the Rectangle Collection, the Oval Series, and the Bronze Firescreen, all constructed from hand-forged steel and available in a variety of sizes. 415/550-9328. Jefferson Mack Metal, San Francisco. **CIRCLE 217**





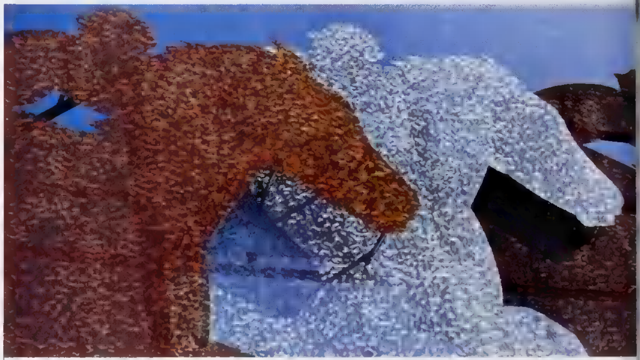
▲ Railings rally

Livers Bronze Company's new railing systems include Ballo (above), which is sup ported by stainless-steel pickets with a side-mounted handrail, and Strata, a stainless-steel, post-supported railing system with a tempered plate-glass infill. Also new from Livers is a line of commercial grade door pulls in bronze and chrome-plated bronze. 816/300-2828. Livers Bronze Company, Kansas City, Mo **CIRCLE 215**



◄ Solid bronze hardware

Sun Valley Bronze designs and manufactures a complete line of original handcrafted and hand-finished solid bronze door, window, kitchen, bath, an cabinet hardware. The collection is offered in either silicon or white bronze patinas and in a variety of finishes. All entry sets are available with a choice o levers or knobs and arch or rectangula plate designs. Sun Valley offers door knockers, doorbells, door stops, and other accessories. 208/788-3631. Su Valley Bronze, Bellevue, Idaho. **CIRCLE 2**



▲ Full-color glossy

Moz Designs produces column covers, room dividers, canopies, and wall-panel sy tems of metal and translucent plastics. Their aluminum laminates can be applied ceilings, walls, privacy.screens, signage, and display units. Wall systems, including wall panels, reveals, and corner and base components, are engineered to make installation efficient and are available in many different configurations. Products a designed and manufactured in-house, allowing for a variety of custom work, such the signage for the Singapore Turf Club in Emery, California, shown above. 510/44 0853. Moz Designs, Oakland. **CIRCLE 218**

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The New Jerusalem Baptist Church was always envisioned with a precast exterior finish. Conventional precast — with its weight, difficult installation issues and cost — would not work within the project's tight budget. After several other options were considered and rejected for the 10-story nearly 30,000-square-foot structure, Slenderwall was brought to the table.

THE CHOICE

Architect Gary P. Santos states, "Slenderwall just makes sense — the perfect choice for the project. Slenderwall is the only product that can cost-effectively clad the building, provide the desired finish, and overcome all of the obstacles." The versatility of the panel design process enables intricate cutouts for the stained glass and detailed cornices, and the "brilliant white" granite-like exterior finish is dazzling. Santos concludes: "Slenderwall is permanent, easy to install, and keeps costs down — something we can't get with any other product."

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Slenderwall architectural precast concrete panels feature 2 in. of architectural precast concrete anchored to a heavy-gauge galvanized steel frame by epoxy-coated stainless steel Nelson® anchors. At 28 pounds per square foot, Slenderwall decreases shipping costs and enables the use of lighter structural steel framing and foundations, while offering superior seismic protection. Installation time and costs can be reduced by 20% due to the exclusive "lift-and-release" panel landing system, allowing more efficient erection with smaller capacity cranes. Slenderwall is the only precast product available designed with a thermal break, for reduced heating and cooling costs for the life of the structure. Panel installation 1 in. outboard of the floor slab increases usable interior floor space.

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Queens, New York
Gary P. Santos, Architect

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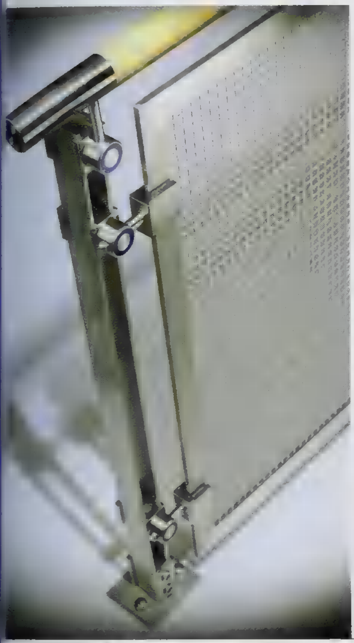
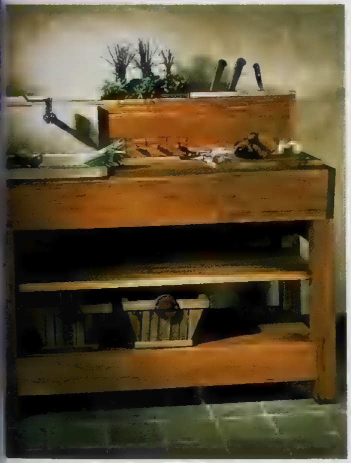


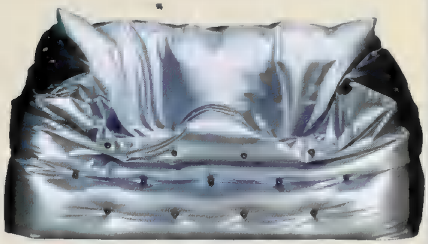
◄ Stainless and nylon
Handrail Design announces their continued distribution of railing systems formerly marketed by HEWI. Railing systems include inox and Circum stainless steel and HEWI's nylon system made of colored nylon with steel inserts throughout. Infill options include glass or perforated stainless-steel panels, or horizontal rails of 15-mm-diameter solid stainless steel. The stainless-steel systems may be combined with components of the nylon system and with straight top rails made of natural wood in several finishes. Railings are designed to meet all building codes and standards. 717/285-4088. Handrail Design, Lancaster, Pa. **CIRCLE 219**



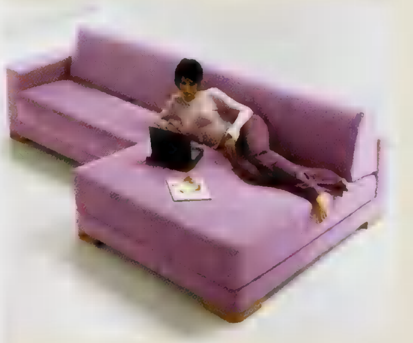
◄ Portable prep
Constructed of solid walnut, the Vatelier by La Cornue makes food preparation possible in almost any room, from the kitchen to outdoors. The countertop features a small sink, cutting board, and a compact work surface in the center. Also included are 12 spice drawers, an integral knife rack, and two shelves beneath the counter that come with two wooden baskets. 800/892-4040. Purcell Murray, Brisbane, Calif. **CIRCLE 221**

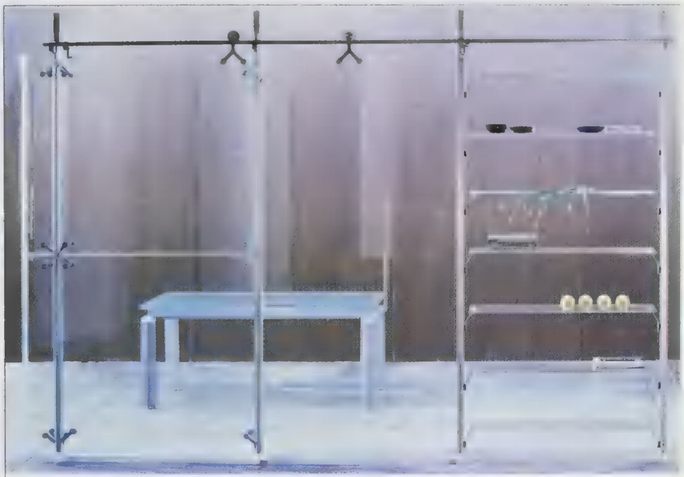
Hand-tufted rugs
rtin Patrick Evan Limited is a Chicago-ed company specializing in exclusive tom rugs and carpets. Handmade in a, the rugs and carpets feature mate-s ranging from traditional wool and to fibers such as linen, cashmere, hair, and chenille. Projects range n corporate headquarters to private nes. 800/734-8214. Martin Patrick n, Chicago. **CIRCLE 222**

Product of the Month
NYIT Design



New–York based NYIT Design represents Italian home furnishings brands that have previously had little or no exposure in the United States. Designed by Luigi Giabardo, Flower (below) allows for countless configurations of sofa (up to 114"), armchair, ottoman, and extensions. Handcrafted in Italy by Models, Flower will be targeted for use in hotel lobbies and retail spaces; a smaller version will be scaled for apartments. The frame is in solid and multi-layered wood with spring systems of interwoven and reinforced elastic belts. Covers in fabric and Alcantara are completely removable and available in a range of colors; a leather version has nonremovable covers. Feet come in several wood finishes, including natural cherry and bleached maple, as well as an aluminum version with line relief. The Blob (top right) is a new take on the "beanbag," combining an old concept with new technology. Made in Italy by Antidiva, a series of internal cords allows the shape of the lounger to conform to the body, making a variety of sitting and sleeping positions possible. 866/499-6948. NYIT Design, New York City. **CIRCLE 220**





▲ Crystal clear
The Sica line of furnishings, lighting, and wall systems can be curved, colored, or sandblasted. The furnishing line includes tables, mirrors, a computer console, and accessories. The Visan glass system (shown above) is made of 8-mm-thick, extra-clear tempered glass. Visan features a height-adjustable shelving system and an optional sliding-tempered-glass door that hangs from a stainless-steel runner. Visan can be used residentially as a partition wall or open bookcase or as a display system for a retail environment. Sica is a division of the Italian company Curvet. 814/663-0704. Curvet USA, Corry, Pa. **CIRCLE 223**

▼ Seal the deal

The Sealed system from Citterio was one of the office-furnishing solutions on display at this year's Milan Furniture Fair. Sealed is a new system for dividing space that is able to meet both the existing needs for space division and any future expansion or reuse. These qualities have been achieved through the basic characteristics of the Sealed range—in particular its modular design, freestanding metal structure, ability to support a wide array of accessories, and its compatibility with other Citterio products. Sealed is easy to erect and dismantle and can serve multiple uses and specifications thanks to its double panels and spacers. 39/031-853545. Citterio, Sirone, Italy. **CIRCLE 224**

◄ Tough enough for New Yo

Marvin's StormPlus Wood Ultimate
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New York State Building Codes that w
go into effect January 1, 2003. It featu
two panes of glass and a tempered
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energy costs and provide enhanced stru
tural protection during violent weather. T
StormPlus line will eventually include a w
variety of windows and doors. 888/537-8266. Marvin Windows and Doors, Warro
Minn. **CIRCLE 225**

► Spa upgrade

In response to more hotels and resorts adding spalike amenities to attract travelers, the Best Western Siesta Beach Resort in Sarasota has upgraded its guest rooms with therapeutic air-jet baths. The Sensation, a corner tub with a removable skirt, was chosen because of its size (54" x 54" x 20") and completely pipeless desig
The tub blows air instead of water, improving the quality of the massage and providin
quieter bath. 800/463-2187. Ultra Baths, Saint-Nicolas, Quebec. **CIRCLE 226**

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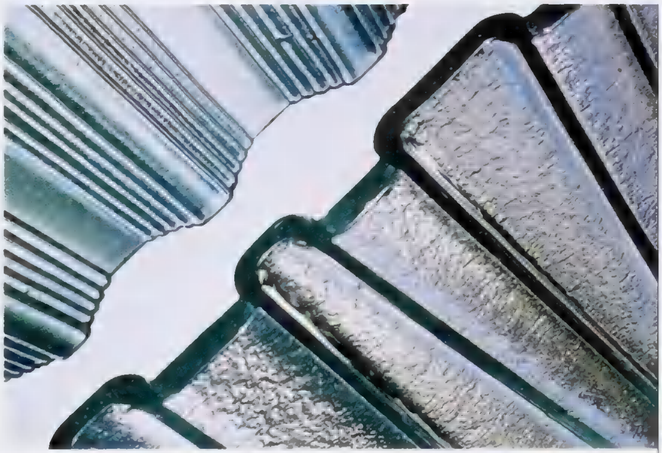

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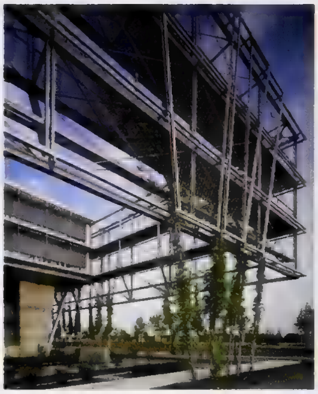
Originally produced by Nathan Allan Glass Studios for an architectural office that was concerned about cleaning a clear, shaped product, the Venetian Series retains the texture throughout the glass surface while also forming a curvy shape. Retaining full texture in the glass creates full privacy, allows light to travel through, and eliminates concerns over fingerprints. Venetian glass can be tempered to meet safety requirements and can be produced in sheet sizes up to 135" x 77". 604/277-8533. Nathan Allan Glass Studios, Richmond, British Columbia. **CIRCLE 227**

▼ Floating framework

The new office for Swiss RE Germany AG in Munich features a facade design based on X-Tend stainless-steel netting from German manufacturer Carl Stahl. A floating wall of Virginia creeper and wisteria is supported by a framework of X-Tend stainless-steel cable netting. The netting can withstand enormous loads and stress without losing its original tensioning. 49/7162-4007184. Carl Stahl Gmbh, Süssen, Germany. **CIRCLE 228**



▲ On your trail

The CM993 computer-managed exit trim from Von Duprin is a battery-po ered, stand-alone exit trim designed use with Von Duprin's 98/99 series devices. It can manage up to 1,000 users and provides an audit trail for last 1,000 events. 800/348-2263. Access Hardware Supply, San Leand Calif. **CIRCLE 229**

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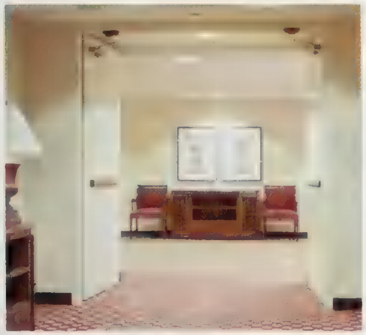

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Product Literature

Luminaire literature

Holophane recently released brochures on two of their lines of luminaires. The CrystalGlo line offers 2 x 2 high-intensity discharge lighting for commercial, retail, and academic applications. The Bantam 2000 line features low-profile luminaires for heavy industrial and low-ceiling applications. Also new from Holophane is the *College and University Lighting Guide*, which provides recommendations for illuminating various indoor and outdoor areas on campus. 740/345-9631. Holophane, Newark, Ohio. **CIRCLE 230**

Artistic applications

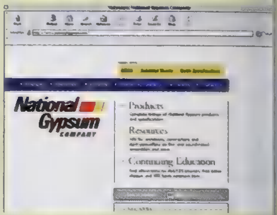
The new brochure by Metallon takes readers through the step-by-step process of applying Metallon finishes to create decorative metal accents on vinyl, wood, polyurethane, aluminum, and other building-product surfaces. 304/485-1937. Metallon, Parkersburg, W.Va. **CIRCLE 231**

Downlight trims

The new four-page brochure from Ardee Lighting features information on Varianti and Focus, the company's collection of coordinating trims for adjustable and fixed recessed downlight fixtures. 704/482-2811. Ardee Lighting, Shelb N.C. **CIRCLE 232**

NEW SITES FOR CYBERSURFING

Ranked among the best business-to-business Web sites, this site offers information on all National Gypsum



products as well as numerous case studies **www.nationalgypsum.com**

You can now find a kitchen gallery and interactive product information for all Jenn-Air products **www.jennair.com**

Redesigned site for professionals and consumers with projects, data sheets, and products **www.tecspecialty.com**

Hardwood building guides

The *Finishing Touch* specifying guide offers valuable tips and tools on work with hardwood floors, cabinets, moldi and millwork. The 32-page booklet ar interactive CD-ROM contain informati on hardwood properties, as well as a finishing guide and a "smart specifyin guide. 412/281-4980. The Hardwood Council, Oakmont, Pa. **CIRCLE 233**

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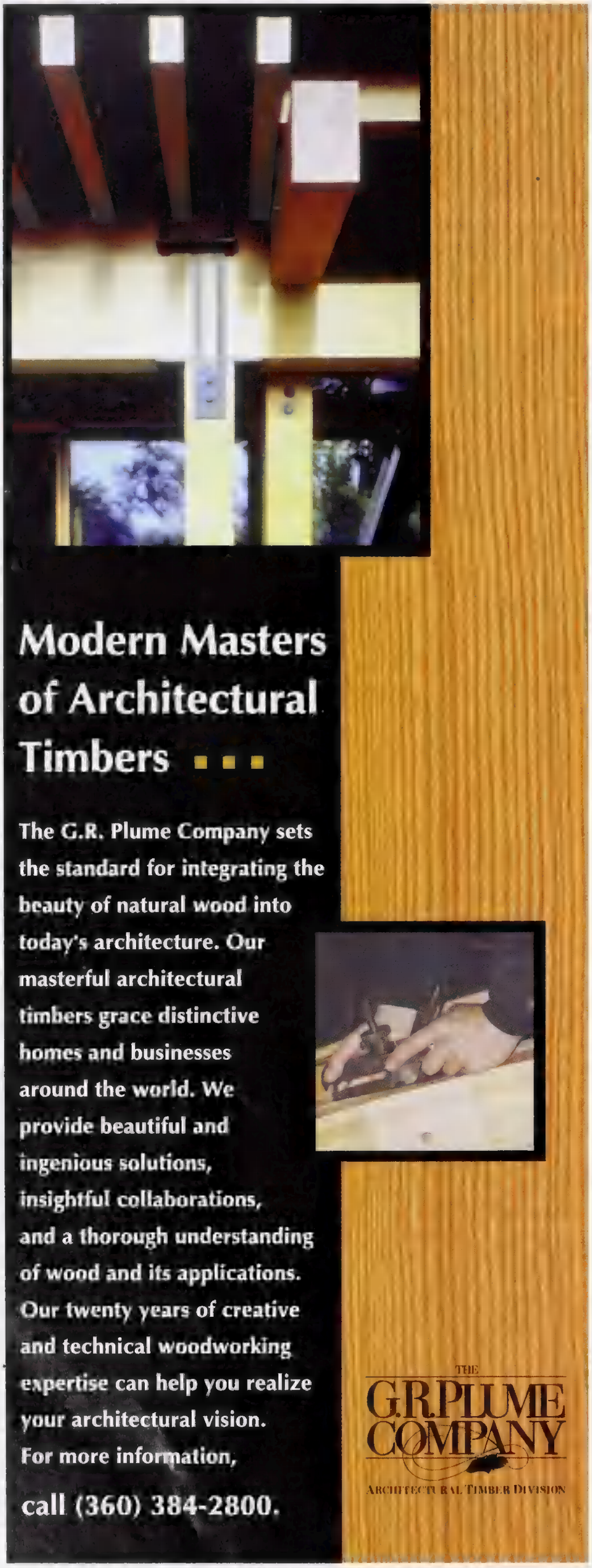

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Product Literature

Kitchen catalog

The new catalog from Snaidero contains more than 50 color pages. The five European-styled kitchens featured—Sistema ES, Ola, Viva, Idea, and Gioconda—are shown with various finishes and options. 310/516-8499. Snaidero USA, Los Angeles. **CIRCLE 234**

Windows and doors

Champion's new color brochure contains all of their products with updated data to help with specifications. The brochure highlights their tilt double-hung and terrace doors and casement and side-load double-hung windows. 516/921-6200. Champion Window and Door, Syosset, N.Y. **CIRCLE 235**

Cabinet hardware

New product photos and kitchen scenes are among the featured items in a 96-page color catalog detailing Amerock's complete cabinet hardware program. Over 1,400 hardware pieces are featured, including new styles such as Cyprus, Village Classics, Divinity, Funzie'Z, and other recent additions. A finish guide and comprehensive index with product dimensions are also included. 815/969-6308. Amerock, Rockford, Ill. **CIRCLE 236**

Ceiling systems

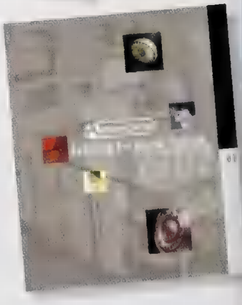
The newly updated *2002/2003 Ceili* *Systems* catalog from USG Interiors provides comprehensive product spe cation information on the company's complete line of acoustical ceiling pa suspension systems, and specialty ce ing systems. 888/874-2450. USG, Chicago. **CIRCLE 237**

Lighting navigator

Universal Lighting Technologies recen updated its *Ballast Navigator*, which includes all the company's product lin with catalog numbers, wiring diagram and reference dimension drawings on one page. The product lines included a electromagnetic, electronic, dimming, compact fluorescent, high-intensity dis charge, and sign. 800/BALLAST. Unive Lighting Technologies, Nashville, Tenn. **CIRCLE 238**

Outdoor living

Now available from Weyerhaeuser Building Materials is a 12-page brochu featuring product photos, deck design ideas, information on product standar and details on Western Red Cedar. 877/235-6873. Weyerhaeuser, Federa Way, Wash. **CIRCLE 239**



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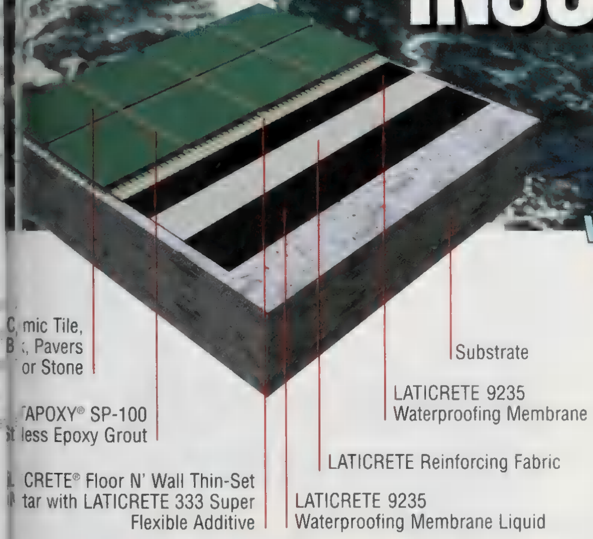

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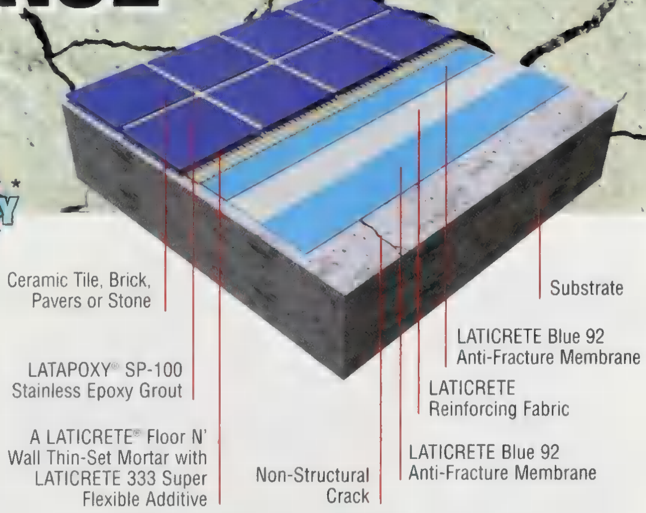

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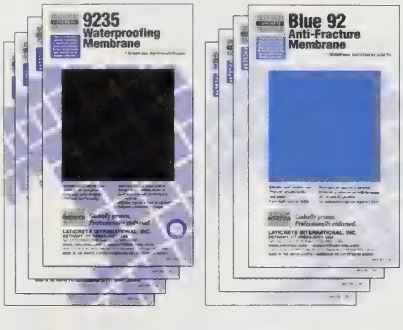

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Program title: "Designers Get More Information Earlier and Faster via Affordable Rapid-Prototyping Tools" (11/02, page 187). 11YEDITM

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3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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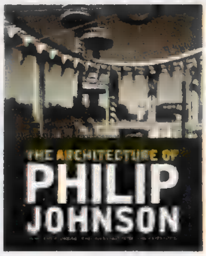

The Architecture of Philip Johnson
Foreword by Philip Johnson, text by Stephen Fox
This is *the* book on Philip Johnson's architecture. Projects range from the sculpture garden at New York's Museum of Modern Art to California's Crystal Cathedral.

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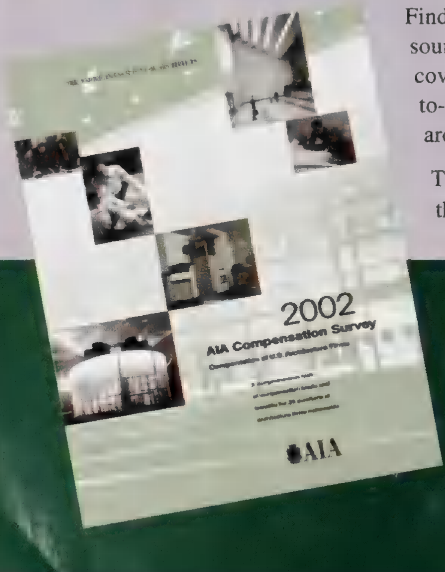

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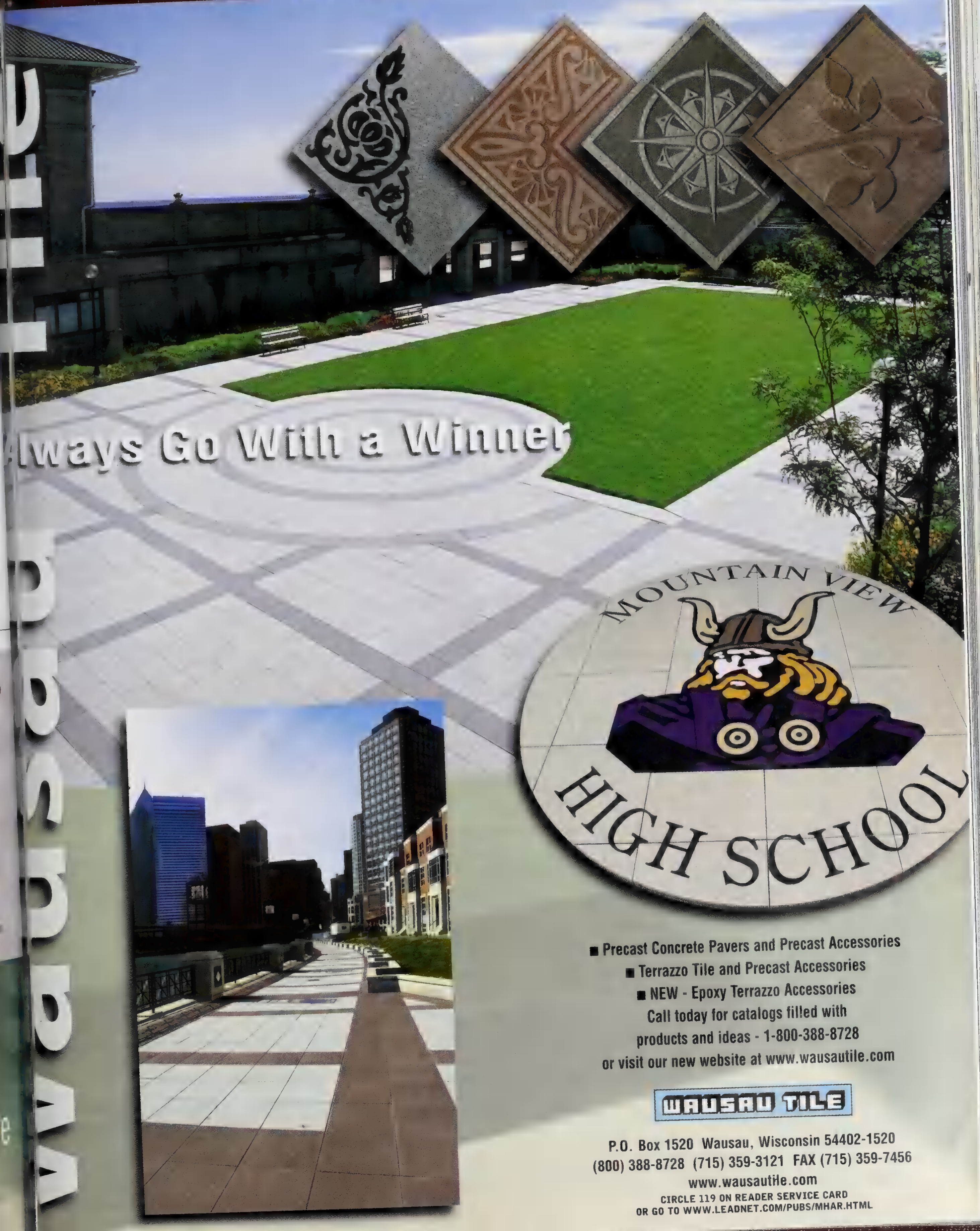

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Program title: **"Window Walls: Bringing the World Into Your Living Room" (11/02, page 203)** 11YSPONU

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2. a b
3. a b
4. a b
5. a b c d
6. a b c d
7. a b c d
8. a b
9. a b c d
10. a b

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2. a b c d
3. a b c
4. a b
5. a b
6. a b c
7. a b c d
8. a b c
9. a b
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3.	a	b			**7.**	a	b	c	d					
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3.	a	b	c	d	**7.**	a	b	c	d					
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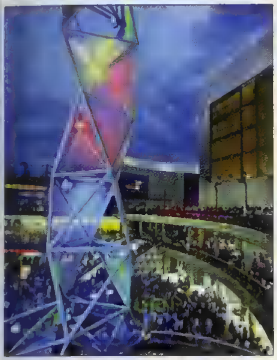

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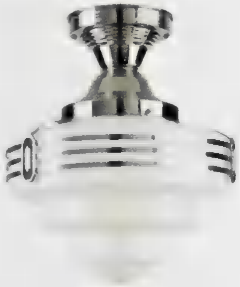
The Grand Avenue



Reflecting the Art Deco aesthetic, this fixture was often used in commercial applications in the late 1930s. It's one of over 500 lighting and house parts available from Rejuvenation Inc. To request a free catalogue or specifier's binder, call 877-745-1900 or visit rejuvenation.com.

Rejuvenation

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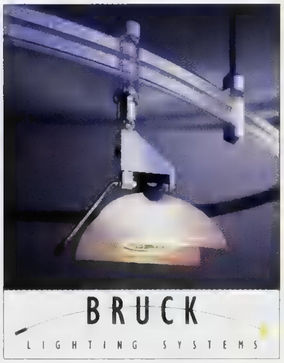
Flex-Line



The intelligent track with memory. The track flexes (not bends) to allow for curved or linear installation, and with two independent electrical circuits it is listed for a total of 600 watts. www.brucklighting.com Phone: 714.424.0500 Fax: 714.424.0505

Bruck Lighting Systems

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Vintage Style Lighting Fixtures & Ornamental Poles

Manufacturer of vintage style luminaires, ornamental poles with coordinating bollards and landscape furnishings, available in a wide variety of designs. Welded for single unit durability and topped with a choice of high performance lamping, reflectors and refractors. For more information request catalog. 847-588-3400, Fax 847-588-3440. Email: info@sternberglighting.com www.sternberglighting.com

Sternberg Vintage Lighting

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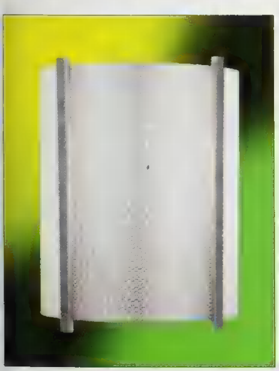
Engineered To Be Seen



The ICON with perf is one of the new ADA compliant wall sconces offered by OCL. Vertical bars of aluminum accentuate ICON's cylindrical virgin white acrylic. The optional perf shield compliments the simplicity of the design. ICON is offered in incandescent and compact fluorescent lamping. Flexibility and style, ICON by OCL. 314-863-1895

OCL

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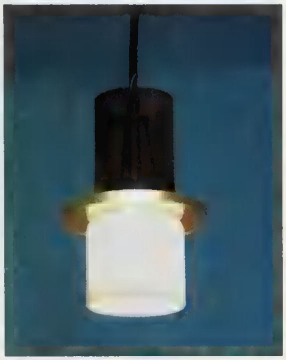
Modern Architectural Lighting



Our collection of modern lighting features clean design and simple fabrication. Each pendant fixture, surface mount light and wall sconce combines finely finished metals with either hand-blown colored, or shaped and textured glass. This distinctive marriage of glass and metal creates a 21st century look that is captivating yet affordable. Tel. 206-282-3023 Fax 206-282-3276 www.fluxinc.org

Flux, Incorporated

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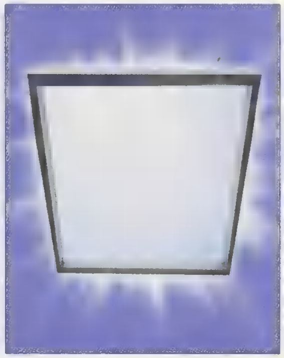
Insulated Translucence in Glass



Quality buildings can now have all the benefits of insulated translucent glazing PLUS the timeless beauty & durability that comes only from glass. Unlike plastic solutions, SOLERA™ insulated translucent glazing units deliver over 70% light transmittance plus U values of .25 to .14. Curtain wall, sloped, skylights....glass to architectural spec. Call 902-794-2899 or visit www.advancedglazings.com

Advanced Glazings Ltd.

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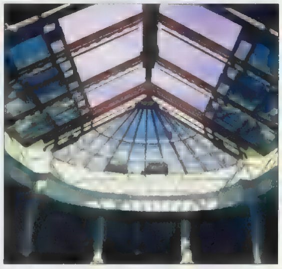
Retractable Roof Enclosures & Skylights



Custom designed retractable roof panels and operable skylights create year-round settings. At the touch of a button, motorized panels retract to open 50% of the roof area, letting in sunshine and fresh air. Maintenance-free thermally broken aluminum framing. Enclosures ideal for restaurants, patios, pools and atriums. For more information, call 800-267-4877, Email: openaire@openaire.com or visit www.openaire.com

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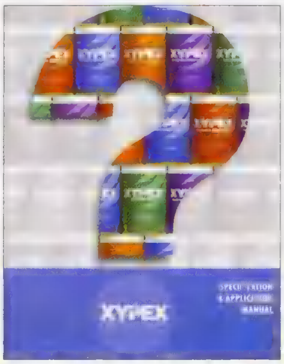
Concrete Waterproofing by Crystallization



Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures. Call toll free 1-800-961-4477 or visit our web site at www.xypex.com

Xypex Chemical Co.

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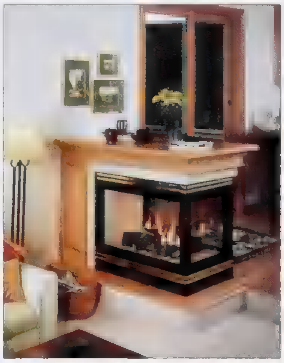
Three-Sided Fireplace for Unlimited Installations



Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call 888-427-3973.

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SMC®NOC Vision™... A 24/7 Console Solution

Design flair, flexibility and comfort with the SMC® NOC Vision™. The modular construction, numerous configuration possibilities, multiple tiers, company color accents as well as the many other unique features offered compliment your work environment perfectly. Find out more about the SMC® NOC Vision™ at www.smcplus.com or call 1-800-SMC-PLUS.

SMC

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Extruded Aluminum Shelves

Rakks aluminum shelves feature an attractive low-profile design that exceeds the strength and stiffness of 3/4" plywood. Stocked in clear anodized aluminum, and available in custom finishes, these shelves look great with Rakks shelving hardware. The system can accommodate 4, 6, 8, 10, and 12-inch shelf depths in lengths up to 12 feet. www.rakks.com 800.826.6006

Rangine Corp. / RAKKS

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Quick-Spec..the Desktop Companion for Architects!

The new Quick-Spec from InterEdge Technologies offers a fast, finger-tip reference to a complete range of fire & safety rated products. For in-depth product information & options, manufacturing video & CSI specifications just slip out the CD & go. It's a must for those who don't have time to wade through the office library or search the web for clear fire & safety glazing solutions.Fax:415-289-0326, email: interedgemsf@aol.com; www.firesafe-glass.com.

InterEdge Technologies

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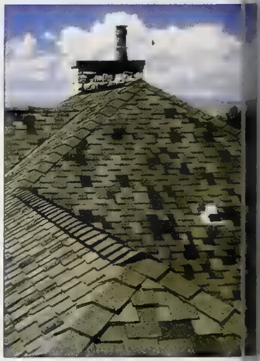
Presidential™ TL



With its patented tri-laminte technology and rugged scptured tab design, CertainTell's Celotex Presidential™ TL a super-heavyweight shingle (60 lbs/square) designed to givene rich look and depth of wod shakes. Presidential TL is alge-resistant, carries a UL Clas A fire rating, is UL certified to net stringent ASTM D3462 prformance standards and atures a lifetime, limited warray.

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Panelfold

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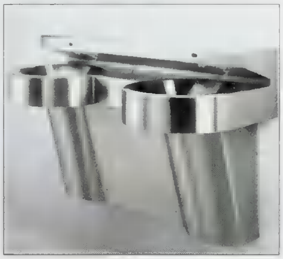
System M2



As innovators of washroom plumbing design, Neo-Metro Collection's System M2 is the solution that merges creative design with ease of installation. Only one plumbing connection is required for multiple basin arrangements, in a variety of modern basin styles and options. System M2 is the ideal washing system for modern office spaces, restaurants and hospitality venues. Call (800) 591 -9050 or visit www.neo-metro.com.

Neo-Metro® Collection

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Applications

The new flush exit device is designed for use on TOTAL DOORS in single, pairs and double egress pairs. Ideal for corridor & elevator lobby applications in all commercial facilities. The exit device allows continuous, uninterrupted sightlines in corridors when doors are pocketed in the open position. Its quiet operation is ideal anywhere noisy hardware is a problem. TOTAL DOORS can be retrofitted into existing door frames, saving time & expense.

Openings

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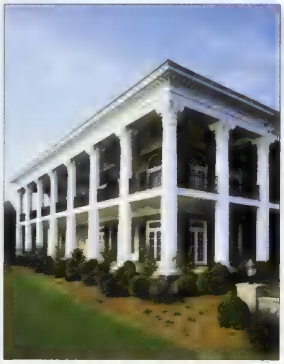
Columns, Balustrades & Mouldings



Melton Classics columns, balustrades and mouldings are the standard for quality and design. Columns are offered in fiberglass, poly/marble composite, synthetic stone, cast stone, GFRC and wood. Balustrades are offered in synthetic stone, poly/marble, polyurethane and cast stone. Ask us about our full line of cast stone products, and polyurethane mouldings and details. 800-963-3060, meltonclassics.com

Melton Classics

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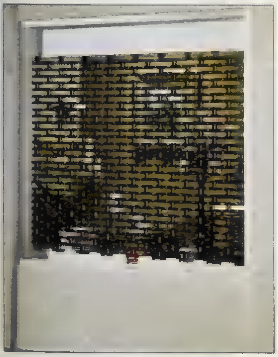
Stylish, Compact Security



Cornell's SentryGate™ grille offers attractive security with up to 5" less headroom clearance than traditional grilles. Continuous concealed metal rods and quality construction provides comforting protection. The open brick pattern curtain features stylish nylon links available in black or white matte finish. 800-233-8366. www.cornelliron.com

Cornell Iron Works

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NIXALITE - the standard for excellence in architectural bird control since 1950. Nixalite stainless steel bird control strips effectively repel pest birds and climbing animals that often plague new and old architecture. Made from 316 stainless steel wire and strip, Nixalite is an inconspicuous barrier that outlasts and outperforms any other bird control methods. For detailed information, visit the Architect's Info Center at www.nixalite.com or call 800.624.1189.

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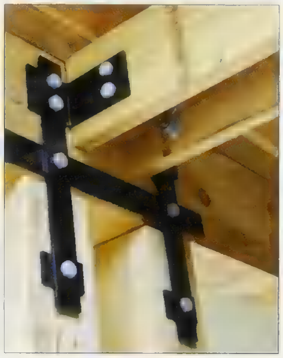
Brackets, Plates and Gussets



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Laser Precision Cutting

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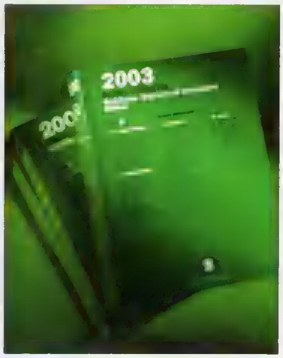

Sweets Product Marketplace—the industry standard for efficiently selecting, comparing & purchasing building products. Latest edition provides comprehensive information on over 61,300 products & more than 10,700 manufacturers. Includes a battery of fully-integrated print & electronic tools with clear color photos, installation diagrams, specifications, contact information, even CAD details, all organized & indexed for quick reference. Call 800-442-2258.

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WoodUniversity.org, APA – The Engineered Wood Association's new online training center, offers a series of self-paced learning modules that address the features and benefits of structural wood panels, glued laminated timber, I-joists, and other engineered wood products. Accredited by AIA, Course 101: Engineered Wood Basics is worth five LU's that meet HSW requirements. For more information, log on: www.wooduniversity.org

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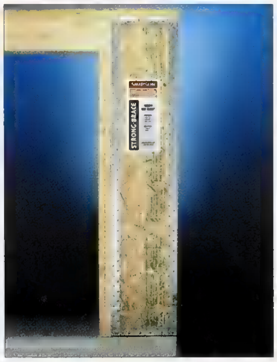
Shearwall Meets IBC/IRC Requirements



Simpson Strong-Brace™ engineered shearwall is designed and tested to meet the bracing requirements of the new International Building Code and International Residential Code (IBC/IRC). It is applicable in wind zones of less than 110 mph and in seismic design categories A, B, C, D1 and D2. Brochure: 800-999-5099 or www.strongtie.com

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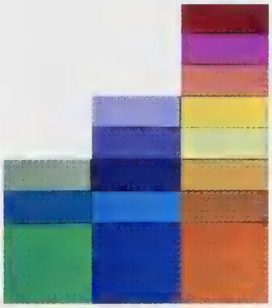
Highlights Color Collection



Roppe is proud to introduce the bright new Highlights color collection in rubber products. When you're looking for stunning new ideas in flooring, this is where to start. The Highlights full line of 16 vivid, new colors is offered in rubber tile, treads and wall base. For more information, call 1-800-537-9527 or visit the Web site at www.roppe.com.

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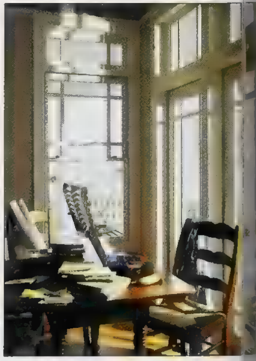
Weather Shield Windows & Doors



As the flagship line for ups le homes, Weather Shield is he company's most compre n-sive line of windows and do s. Weather Shield windows nd doors feature wood inte rs and are available with eithe an extruded aluminum exteri or a wood brick mould exte . Windows and doors com in ten long lasting exterior fi h-es, and are available in an of seven different wood spe es from the Custom Wo Interiors Collection.™

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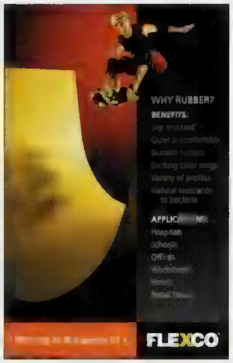
X-Ceptional Rubber Flooring



For performance, comfort and long-term value, FLEXCO®'s proven rubber flooring systems outperform carpet, linoleum and vinyl every time. It is naturally resilient, easy to maintain and withstands wear for cost effectiveness over the product life cycle. Call 800-633-3151 or visit www.flexcofloors.com

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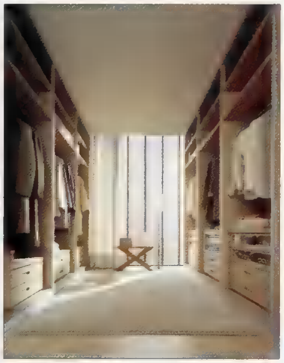
Poliform



Italian manufacturer of high-end wardrobe systems, wall units, beds and kitchens since 1942. Collaborating with Europe's leading industrial architects such as Paolo Piva and Carlo Colombo, Poliform has brought fashion, function and technology together to create unique and timeless design reflecting the personality of the homeowner. 1-888-POLIFORM www.poliformusa.com. Poliform catalog collection: $10

Poliform USA, Inc.

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Sto Guard is a seamless, fluid-applied air & moisture barrier that provides superior protection against air and moisture intrusion in a variety of applications, including underneath brick, wood, vinyl, cement siding and EIFS. Sto Guard is a vapor-permeable barrier applied to sheathing and beneath exterior wall claddings. Ph: (800) 221-2397 Fax: (404) 346-3119 www.stocorp.com

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Samsung Staron® Solid Surface Countertops

Staron by Samsung is an advanced solid surface material with many residential and commercial applications. Commonly used for kitchen and bathroom countertops, sinks, shower walls, and tub surrounds, Staron allows designers to include a variety of decorative edge treatments, inlays and insets. Visit www.GetStaron.com/design3 to find a distributor near you and view Staron's large color selection.

Samsung Staron

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Woodfold-Marco Mfg., Inc.

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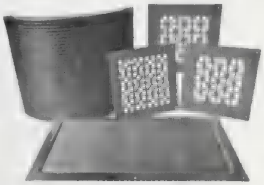
Architectural Grilles



Kees Incorporated offers architectural stamped and bar grilles. Stamped grilles may be manufactured from steel, galvanized steel, stainless steel, aluminum, brass or commercial bronze in many decorative patterns and thicknesses. Stamped grilles are available both flat and curved in a variety of finishes. Bar grilles can be fabricated from stainless steel and brass in a wide variety of styles and finishes. Ph: (920) 876-3391 Fax: (920) 876-3065

Kees, Inc.

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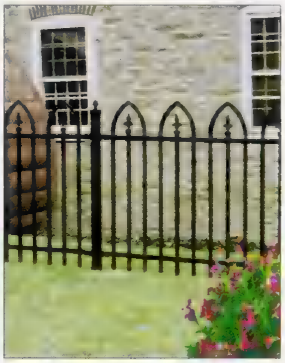
Ornamental Picket Fence with a Purpose



Monumental Iron Works™ is a modular system with the solid look & feel of authentic wrought iron. When assembled, it creates one of the strongest ornamental fence systems on the market. Welding processes are eliminated to avoid red rust problems. MIW utilizes a duplex coating of polyester resin over hot-dip galvanized steel for corrosion protection. Master-Halco, Baltimore, Maryland 21040. 410.676.2744 Email: spec@fenceonline.com Web site: www.fenceonline.com

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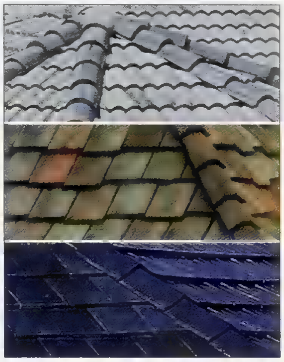

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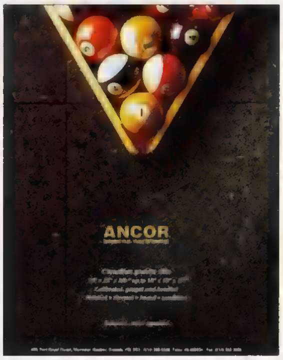

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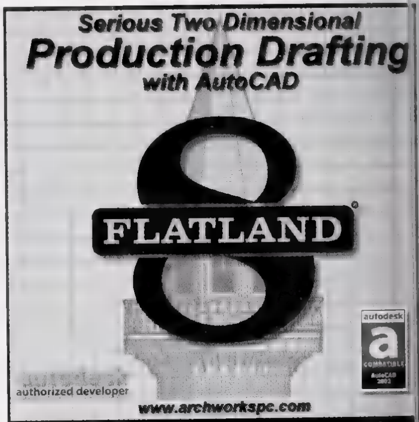

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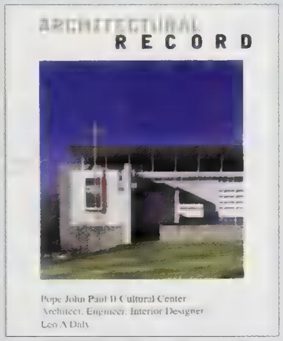
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Profile

Ayala Sefarty: A designer by nature

Interviewed by Randi Greenberg

Initially an artist who worked in the humble mediums of dust and rice paper, Ayala Sefarty's multihued, multifaceted design career started while she was snorkeling in the Red Sea. Back on the beach, Sefarty immediately began to sketch the designs that would launch Aqua Creations, her nature-influenced furniture and lighting company. Almost 10 years later, Sefarty has an extensive product line and has branched out into designing casino and hotel interiors, as well as a 2,400-square-foot underwater restaurant in Eilat, Israel. Her latest installation is an enormous futuristic chandelier, composed of 50 lamps hung in the main entrance of an aquarium in Valencia, Spain.

Q: *You studied fine art in Jerusalem and in Londo What led you to furniture design?* Ten years ago was a fine artist, and making props to earn money. Afte my trip to the Red Sea, something happened to me. I rea ized that I was bored with my artwork. I began to desig organic-shaped lamps and furniture and never stoppe

Your work doesn't seem to fit the "form follows functio credo. My designs are definitely functional, but for m form follows fantasy. I'm trying to create something aliv humorous, and colorful—objects with texture and move ment. So much of what one sees tends to be minimal flat or square, so when I design I am not thinking in term of everyday styles.

What materials do you prefer to work with? With lightin projects I tend to work in silk, felt, or glass wrapped fabrics. My newest lighting projects will involve a ne material whose technology we've been working on f more than a year to develop. For the furniture, I us hand-dyed fabrics, and I am starting to use more woo

If you could pick any building in the world to feature you designs, what would it be? One of Gaudí, or a buildin that is very Japanese. In the Gaudí building, my design would be natural, and in the Japanese, a harmony oppositions.

What is your relationship with architects? Architects a my best clients, because they often challenge me wit unusual projects. I think they like to work with us becaus we can do custom work to suit their fantasy. When it's relationship of trust, as it has been working with th architect in the aquarium project in Valencia, it's like birthday party. It's just so easy.

What are the pitfalls for designing an underwater resta rant? There is the necessity to design the indoors coexist with the aquatic outdoors. When diners are look ing out the window, I didn't want the reflection of th interior to clash with their view, so it was important to m to design pieces that would enhance their underwat experience.

How have your designs changed over the years? The work is more cellular structure, more refined, not as brightly colored, and more about topography. a whole, I am more conscious of other pieces in the design of the room. In th past, I thought of each piece as a sculpture.

Who would you like to see sitting in your Satala chair [pictured]? David Bowi Or Eric Clapton.

Photograph courtesy of Aqua Creations

To see more by Ayala Sefarty and Aqua Creations, go to www.aquagallery.co

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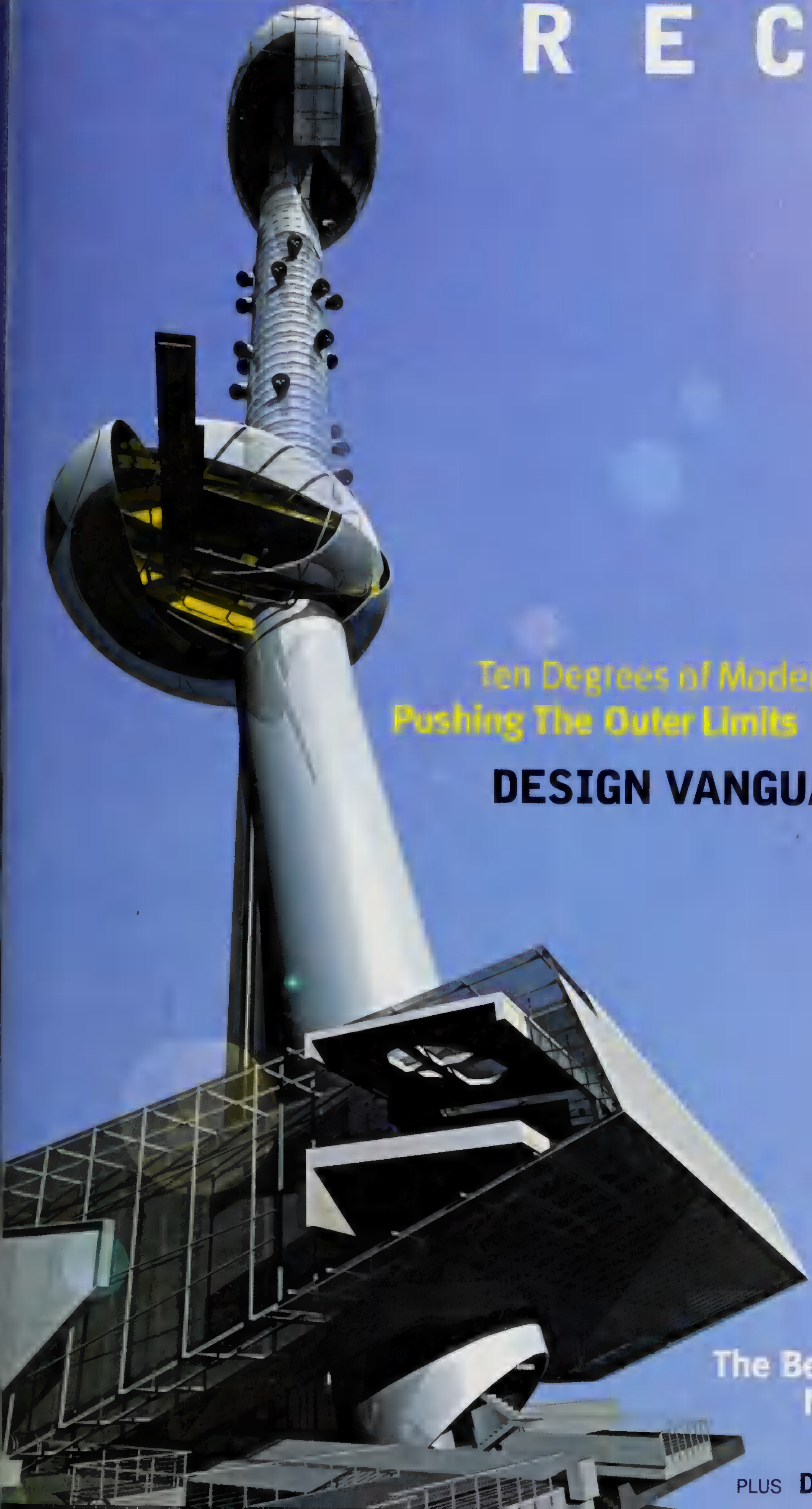

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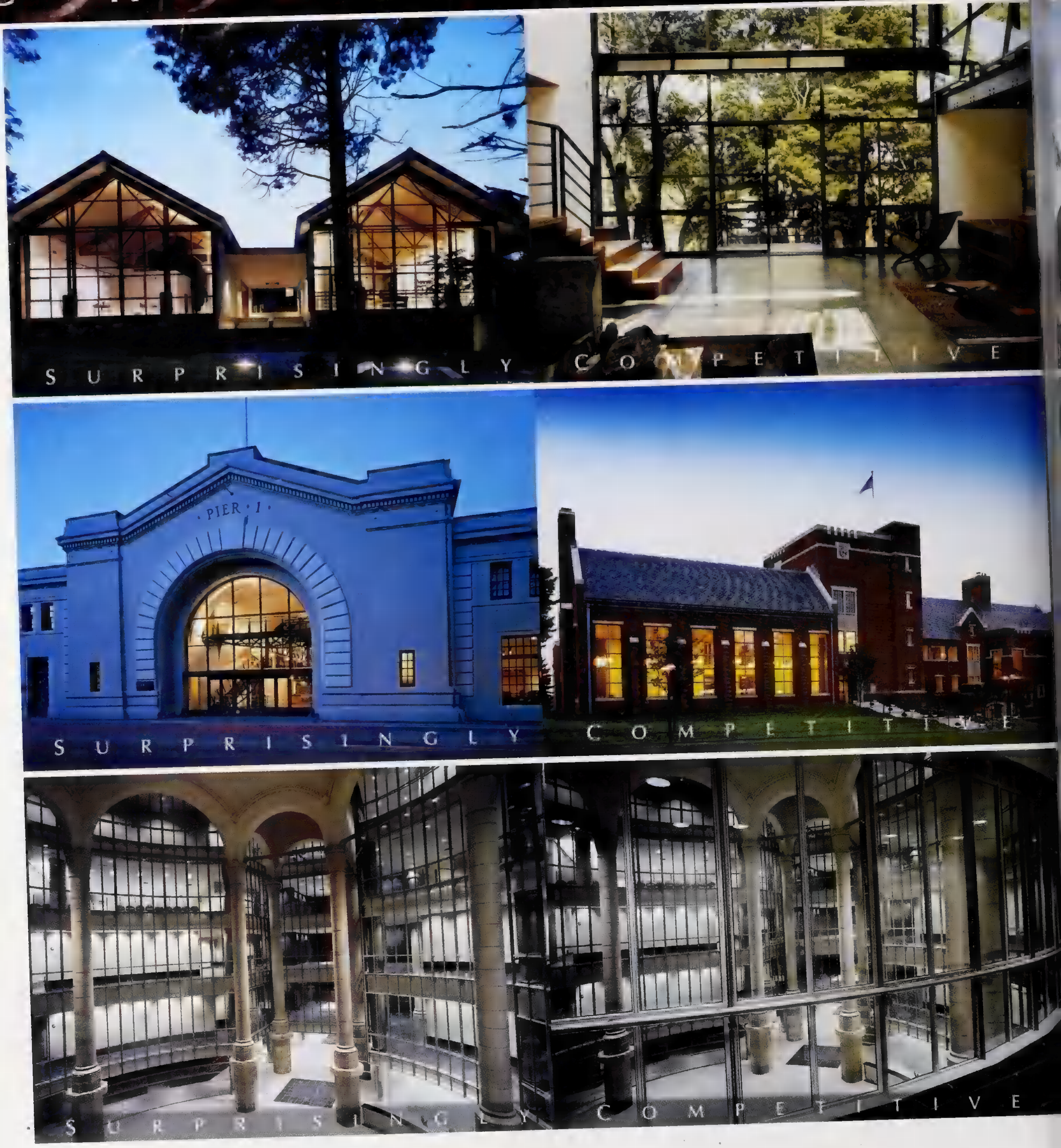

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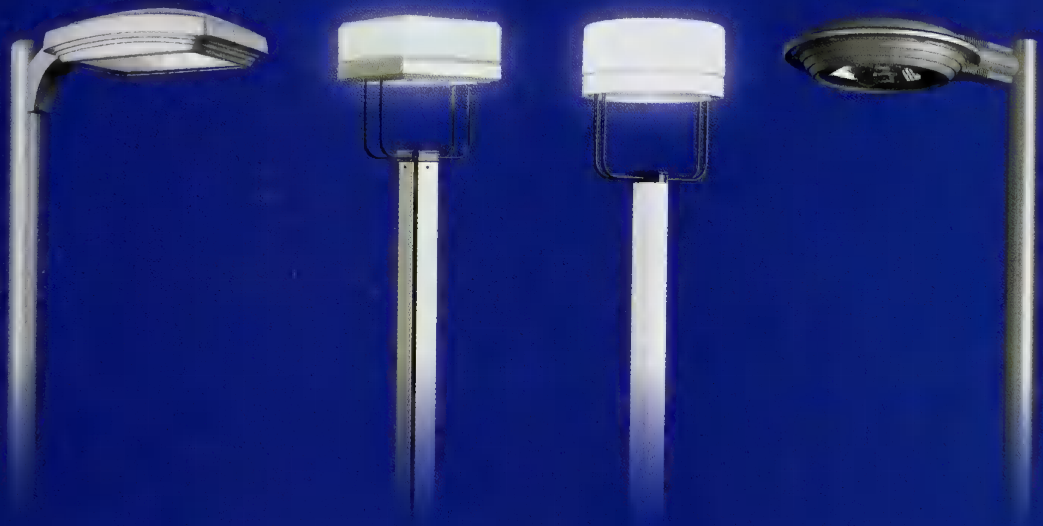

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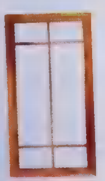

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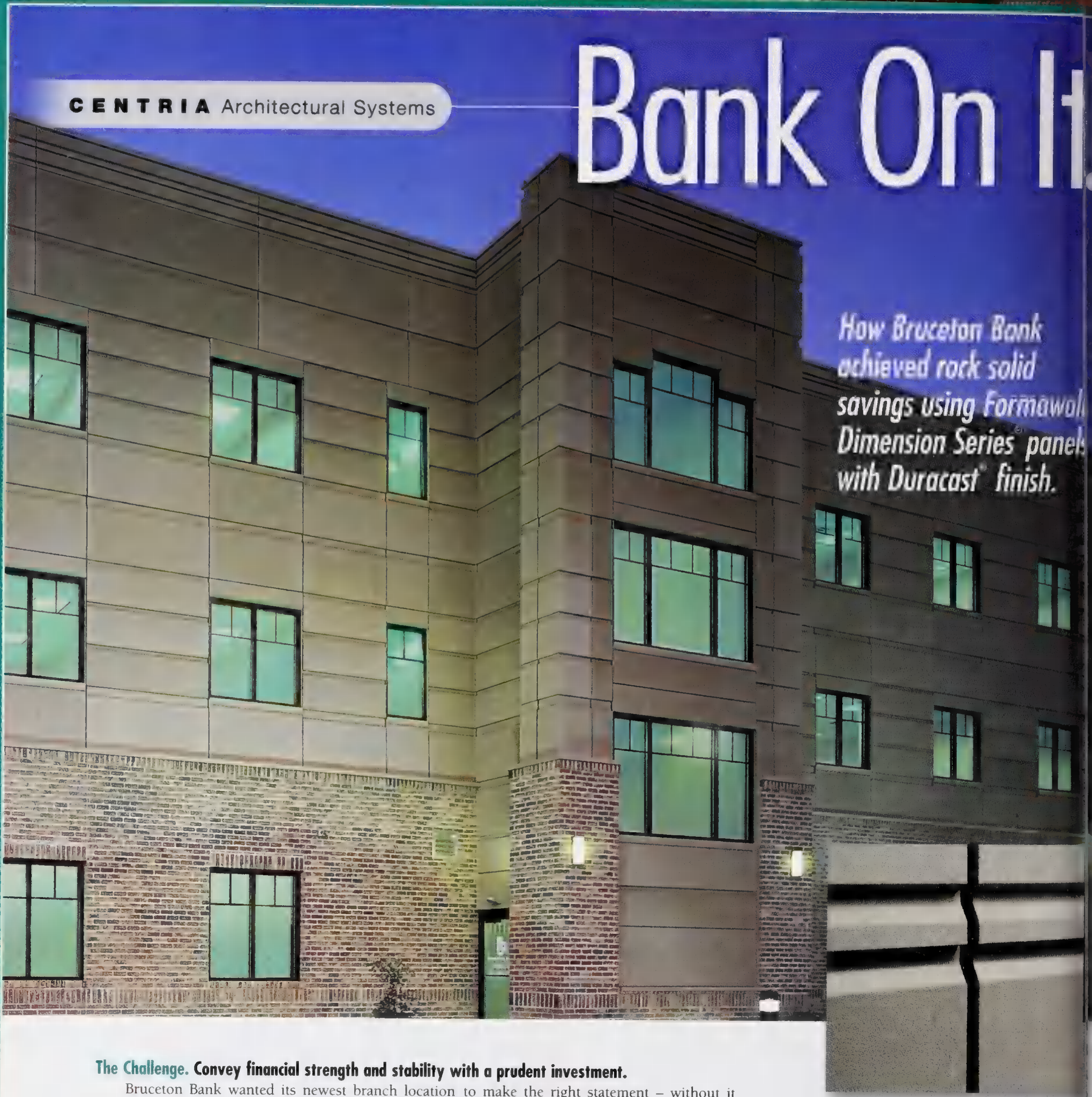
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On the Cover: *Busan Observation Tower competition entry, by Plexus r+d.*
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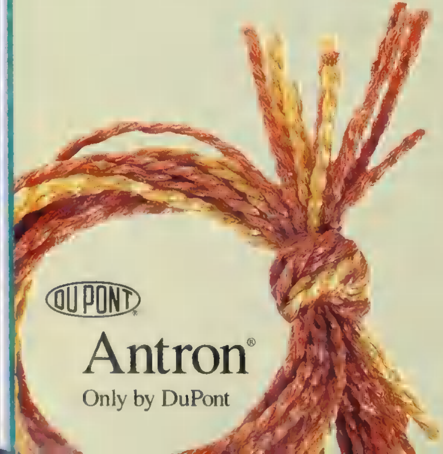

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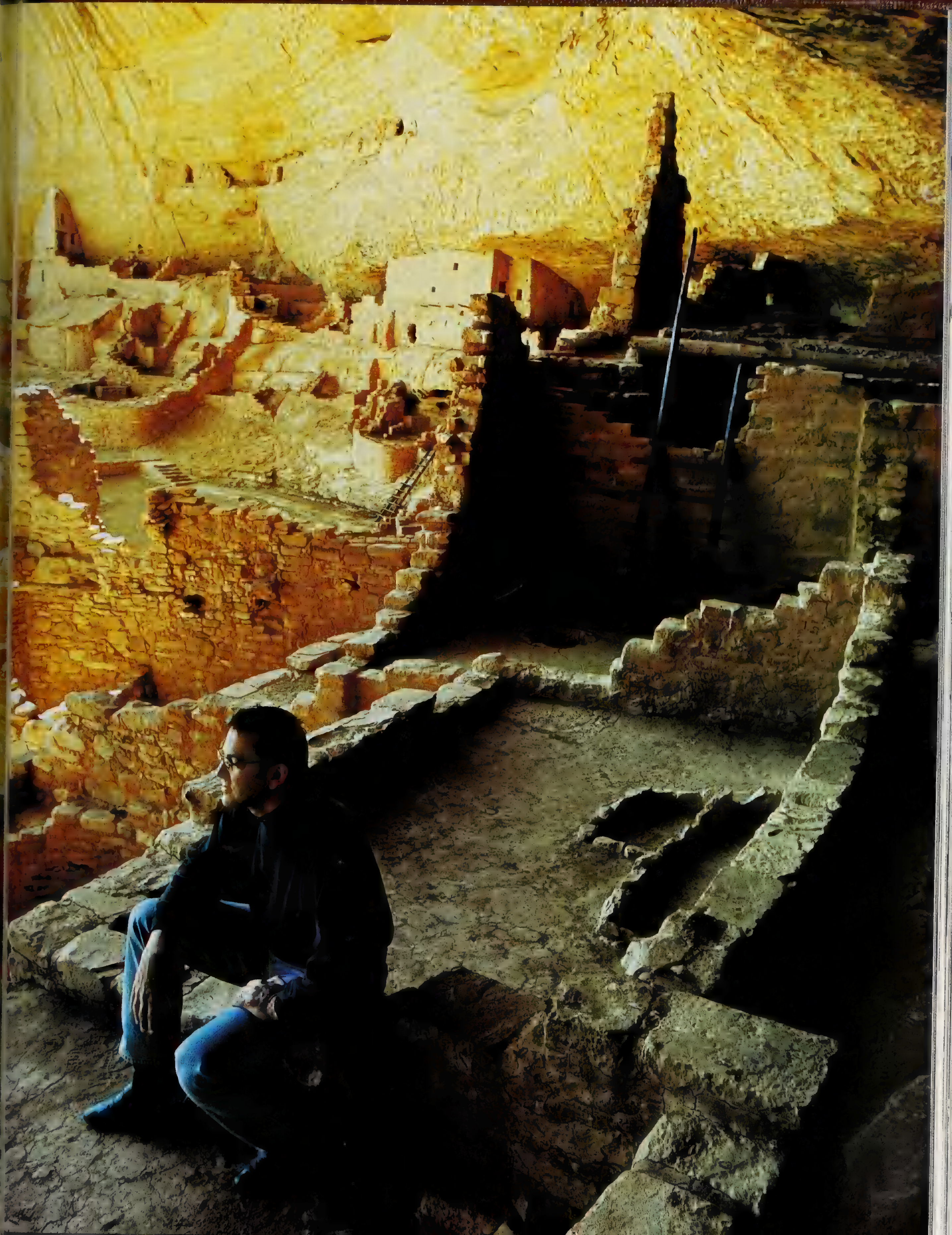

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Audio interviews with a selection of this year's Design Vanguard. This is the third year we have done these interviews, and they're becoming a tradition. Plus various web-only extras from the architects.

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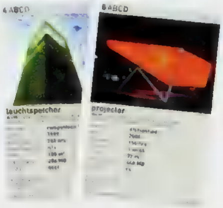

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DESIGN A portfolio of unbuilt projects from four different architects. Three houses and a chapel. WORK A story on the portfolios of two Design Vanguard firms and how they present their work in unique ways. Plus, more news and features from the world of the emerging architect.

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BTS: Design Studios

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Creative spaces are revealed in December's Design Studios **Expanded Building Types Studies** including the four studios featured in the magazine, plus an extra 10 design studio projects from Portland, Oregon; Houston; Denver; New York; LA; and other cities, exclusively on the web. Get project descriptions, plans, specs, photos, and links to people and products involved.

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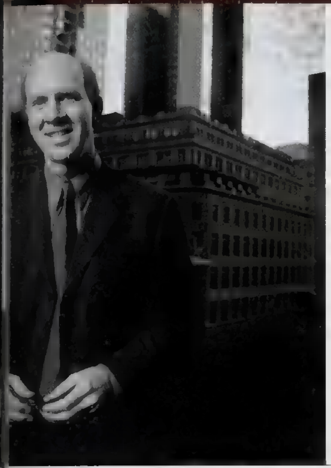

Another Pair of Eyes

Editorial

By Robert Ivy, FAIA

A*ggression is a particle, desire is a wave." Thus Herbert Muschamp, the architecture critic for* The New York Times, *characterizes countervailing forces in the iversal ether, metaphors that once again plunge us into this itic's seductive worldview. Week after week, architects and the gnoscenti read the* Times' *architectural criticism—caught up its language, prejudices, quirks, variable points of view, metimes brilliant fireworks across the cultural spectrum—sponding to a voice that reverberates from coast to coast.*

Although the role of architecture critic at the Times *ay seem inevitable, the position is a recent one. Ada Louise uxtable introduced regular architectural criticism to the ges of the paper in 1963, winning respect both for the iblication and for urban planning and architecture, while rning a Pulitzer Prize—an honor also garnered by her placement, Paul Goldberger. Forty years later, the proaching anniversary of Huxtable's contribution prompts to examine what the paper has accomplished for the field.*

The Times' *coverage and reach are unique. While her major newspapers, such as* The Boston Globe *and the* nicago Tribune, *include architectural criticism of worldwide ojects in their pages, most stories concern interventions ithin their own metro regions.* The New York Times, *how- er, equally quoted in San Francisco as in Westchester County, sumes an exalted position of influence, aided by staff writers gularly covering architecture in a cacophonous, lively brew of ticles: Stories about buildings and cities appear in real estate, ban planning, residential, and cultural beats. We all have our vorites. Yet, uniquely among the other cultural disciplines, chitectural criticism sings solo.*

Therein lies the rub. Critics are meant to judge and to create adherents and enemies: Journalistic ethics protects them. The paper should elicit a national dialogue. Instead, speaking ex cathedra from the newspaper of record, the current, lone officeholder wields tremendous authority, if not real power, since no one refutes him. Critical stories by other writers rarely surface anywhere in print, prompting rumors of veto power and mythical hegemony. The Times *critic is, however, but one person in a vast field, and the stakes are too high for the Mother of the Arts to be limited to a singular perspective. Two eyes cannot suffice.*

Unfortunately, the newspaper has missed too much, failing to offer analysis or meaningful coverage of worthwhile projects that deserve our collective attention. Following September 11, which prompted award-winning coverage, many of the newspaper's resources and its chief critic's time were engaged in reporting the developments in Lower Manhattan and in cooking up plans to stimulate debate (placing the critic in a problematic role for future analysis); yet other building continued apace, leaving swaths of worthwhile architecture uncovered.

Giving him his due, Muschamp succeeds at his job by consistently engaging us at the highest level. Following in the footsteps of the late Pauline Kael, if not with her rigor, this devotee of pop culture blends intellectual conceits with earthy figures like Anita Eckberg into an unanticipated, flaming cocktail we're all thirsty for. Who among other contemporary architecture writers would combine psychoanalytic theory with aesthetics? What other writer at a commercial newspaper would dare to assert that "philosophy has abandoned Socrates for Nietzsche," then describe the leap that architects are taking toward a more intuitive architecture? We walk the streets, heady with the intellectual fumes.

Yet, despite Muschamp's occasional brilliance and his shaking up of the establishment's complacency, he remains human and finite. His subjective critical approach, peppered with the personal pronoun "I," reveals much of his own personality and idiosyncrasies along with his ideas. Long ago we became aware of a shortlist of favorites, architects who fall within his canon of small firms worthy of mention and praise, whom he has described as "among those at the forefront of intersubjective architecture." A tongue-in-cheek parody circulating on the Internet and mentioned in the Los Angeles Times *on November 10 convincingly captures his personal style and obsessive list-making.*

While we may quibble over the idiosyncrasies, the newspaper's omissions have been significant. In New York City, the paper avoided serious discussion of the new vertical campus at Baruch College, for example, an ambitious urban intervention by Kohn Pedersen Fox worthy of thoughtful critique. A host of other projects deserved scrutiny. The list ranges from 4 Times Square by Fox and Fowle and Davis Brody Bond's South Court of the New York Public Library to the new international terminal at JFK airport by Skidmore, Owings & Merrill. Perhaps all four were omitted because their architects came from larger "corporate" firms, a designation that routinely draws Muschamp's fire. But also excluded was a proliferation of smaller work by talented, favored firms, such as the Melrose Community Center by Agrest and Gandelsonas and the Ferry Terminal at Pier 11, Wall Street, by Smith-Miller Hawkinson.

The paper lacked coverage outside the city. For an ambitious national newspaper, where was its commentary on the addition to the Milwaukee Art Museum by Santiago Calatrava, the Cathedral of our Lady of the Angels by José Rafael Moneo in Los Angeles, work by Steven Holl or Daniel Libeskind, or Tadao Ando's Pulitzer Museum in St.Louis? All made important cultural contributions.

"I wasn't able to cover most of those works," he explained in print. "The unfolding of events in the politics of New York architecture was a story I couldn't overlook." Certainly not, but why should the paper remain aloof to issues beyond those produced by a tightly focused cast of characters? Wouldn't the city, its people, and all architecture benefit from enumeration and deconstruction of our successes as well as ou imperfectly realized ambitions?

Moreover, we never know when to look for the column Erratic scheduling, which follows no discernable pattern undercuts a regular readership, producing silent weeks in whic architecture simply goes missing. When it does surface, the con tent appears to be minimally edited, a situation that encourage rambling digressions that often veer far from a thesis. Th inevitable response of some readers is to relegate the column and therefore the field, to the merely capricious. Architectur deserves more attention.

The answer to this dilemma lies in adding a critic t the masthead. For years, more than one individual routinel has covered other cultural beats: art, dance, movies, and musi benefit from multiple points of view. Analogously, another tal ent could write in parallel with Muschamp, counterbalancin aggression with desire, particles with waves—someone to cove the subject when he cannot or isn't interested, one who wil reach outside Muschamp's territory and complete a column when he does not. The time is right; the subject of design, or everyone's lips, deserves the commitment.

Symbol, witness, shelter, portal to consciousness, to paraphrase the critic. Who else can help us winnow through the chaff to find the meanings inherent in new projects? We are fortunate to have an architecture critic at The New York Times *as insightful and engaging as Herbert Muschamp However, rather than his single gaze, architectural criticism in this national newspaper should more resemble the multi-dimensional view of the Hindu goddess Kali, a three-eyed deity simultaneously wielding the heads of her victims and the blessings of continual rebirth in her multiple hands.*

The critic outlined the issues well himself: "Actually, all phases of the building art—including zoning, economics, politics, context, history, aesthetics, and ideology—fall within the traditional scope of critical interpretation." He said it, we need it: Now, great Gray Lady, give us one more pair of eyes.

Robert Ivy

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Letters

When will they learn?

August's article, "What's in a Name?" [Features, page 84], on the controversy in architectural education, says that "Schools have less-defined curricula, and schools are able to create programs tailored to the needs and interests of their students.... After [school], the path to becoming an architect is reasonably standardized." Yet, ask students and interns (which RECORD's article and survey pointedly did not do) which is the more confusing, and they will resoundingly say "internship."

IDP is "reasonably standardized" in the way that we're discovering that corporate accounting rules are "reasonably standardized." Sure, there are rules and a structure on paper, but they don't correspond very well to the realities and demands of practice in the 21st century. So many interns and senior professionals alike routinely "bend" those rules, lie outright, or more often simply don't engage the program (as noted in "Overwhelmed by requirements, interns cheat on reports to NCARB," Record News, July 1999, page 55). This is not an argument for eliminating the rules that we do have, but for having the courage to acknowledge the big white elephant in the room and to do something about it.

Few successful practitioners could practice today as they did in 1979. Yet the basic structure of IDP hasn't changed markedly since it was conceived in that same year. We interminably discuss education, in part because there is a clear structure within which to discuss. All the collateral organizations (including students) are represented in formal policy discussions and are, in fact, represented on each accreditation team that reviews and assesses every professional degree program in the U.S. and Canada. In addition, every three years there is a major (validation) conference to discuss the goals and methods of architectural education. NAAB is a model of collaboration, and though we all have our personal criticism of education, we also have a seat at the table.

The IDP program, however, stands in stark contrast. It is NCARB's program, and they are rightfully protective of it. The result, however, is that practitioners, students, interns, and educators are not represented in policy-making decisions about IDP, and there has never been a true national discussion about either the goals or the methods of the IDP. Unlike education standards, IDP is imposed uniformly across an array of firms—large and small, traditional and experimental—with no accreditation procedures or methods. Even the AIA's Continuing Education providers have standards and procedures they have to meet in order to offer those programs.

Internship (and the profession as a whole) would benefit greatly from the sort of thoughtful, specific, inclusive, and contentious debate that occurs most every day at schools across the country.

—Raymond Dehn, Assoc. AIA
Elness Swenson Graham Architects
1996–97 AIAS National President

Staying in school

Record's guide to architectural education on architecturalrecord.com is an incredible feat. It's essentially the ACSA Guide to Architecture Schools, except up-to-date, online, and free. This is precisely the kind of resource that the national membership organizations have been talking about for years in response to the ongoing debate about school rankings. What an incredible resource.

—John Cary Jr., Assoc. AIA
Cofounder, ArchVoices
Ph.D. student, UC Berkeley

The old school and the new

The photo of Princeton's "Collegiate Gothic" Blair Hall immediately caught my attention [Critique, October 2002, page 79]. In the 1960s, I decided Princeton must be a very nice place to study architecture because I had seen photos of its beautiful campus. Although I knew Princeton was a top liberal arts school, I had no idea where its School of Architecture ranked nationally. Photos of the Princeton "brand" of wonderful Gothic architecture attracted me the most. I was not disappointed.

I disagree with the author's characterization of Princeton in the 1960s as a place so socially stratified that only wealthy students could live in the beautiful Gothic dorms. In my junior and senior years, I lived over the beautiful arch of Holder Tower. My recollection of how we ended up there is that everyone entered the "room draw," and you picked out your rooms based on which names were drawn first. Wealth had nothing to do with who lived where.

Room rates didn't vary widely, regardless of where on campus you lived. Half the students received financial aid, and that percentage is likely higher now. Many loved life in Gothic-style dorms, despite the obvious lack of creature comforts (like bathrooms on the same floor as your room).

Although I now work for a university that has received international media recognition for its modern architecture and innovative landscaping, I still love historic architectural styles. I am glad that Princeton is now building a "modern Gothic" dorm. Collegiate "branding" works for me!

—Michael Burrill, AIA
Via e-mail

School is not yet out!

Robert Campbell's piece in the October issue of RECORD [Critique, page 79] was of particular interest to me. Campus Eclecticism is somethin we can't miss. Campbell is right on target in saying there is a smidgen o elitism in our college architecture.

I believe that architectural style is of importance in creating a group of buildings. Campbell has said before that in creating a group of buildings whose ambience conveys message, a collective style (persona should be carefully considered.

Nevertheless, when a young tour guide in Harvard Yard pointed out to me that H.H. Richardson's beautiful building was out of place, it shocked me. I would agree with him, but would opt for removing all the other buildings, if necessary, and would keep Richardson's.

—Frank H. Cram, AIA, NCARB
Boston

The Cathedral of Our Lady of the Angels, photographed by Julius Shulman with David Glomb.

Corrections

In the November issue, the photographs of the Los Angeles cathedral taken by Julius Shulman, should have also credited David Glomb, wh collaborated with Shulman. In the October Business Week/Architectura Record Awards coverage, photos of the Abercrombie & Fitch headquarters should have been credited to Brad Feinknopf.

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orecasts call for construction industry's expansion to end in 2003

construction industry hopes to tle for stability in 2003 as the wth of recent years may be elu- . That was the message from nstruction industry and economic alysts at the 64th annual Outlook cutive Conference sponsored by Graw-Hill Construction (publisher ARCHITECTURAL RECORD), held in October in Washington, D.C. eakers included Kermit Baker, . AIA, the chief economist for the erican Institute of Architects; Bob rray, vice president of economic airs for McGraw-Hill Construction; David Wyss, chief economist n Standard & Poor's.

Construction in the United tes has expanded in each of past several years, and this year see a projected 1 percent rease from 2001, with $498.9 lion in total construction. wever, the expansion will end in 2003 with a forecasted total of $495.1 million in construction contracts, down 1 percent from 2002, according to Dodge, a division of McGraw-Hill Construction.

Public works projects, for example, had an average annual growth rate of 6.5 percent over the past four years but are forecast for a 3 percent decline in 2003 due to financial constraints at both the federal and state level. Institutional building activity increased an average 8.3 percent over the past four years but is likely to have only a 1 percent increase in 2003. During the same four-year period, as interest rates decreased, the single-family housing market had an average annual increase of nearly 8 percent but is predicted to see no increase next year.

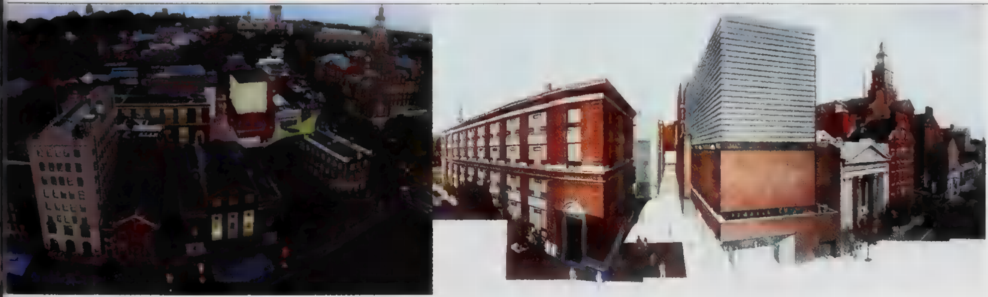
The forecasts could be off, of course, and 2003 could potentially be worse than predicted, depending on possible military action in Iraq or if the economy does not begin to expand. Murray noted, though, that the construction industry is more stable now than it had been in the 1970s and 1980s, and the predicted loss of momentum is mild compared to the early 1990s. *John E. Czarnecki, Assoc. AIA*

The U.S. Sequence of Expansion

BILLIONS OF DOLLARS AND PERCENT CHANGE FROM PREVIOUS YEAR

	1999	2000	2001	2002	2003
TOTAL CONSTRUCTION	448.3 +11%	474.3 +6%	496.2 +5%	498.9 +1%	495.1 -1%
SINGLE-FAMILY HOUSING	164.3 +8%	176.9 +8%	186.8 +6%	204.0 +9%	203.3 -0-
PUBLIC WORKS	74.2 +9%	78.0 +5%	83.9 +7%	88.2 +5%	85.5 -3%
ELECTRIC UTILITIES	9.4 +180%	13.5 +43%	23.7 +75%	14.5 -39%	11.0 -24%
INCOME PROPERTIES	108.4 +7%	113.0 +4%	103.0 -9%	92.5 -10%	94.2 +2%
INSTITUTIONAL BUILDINGS	80.6 +18%	84.0 +4%	90.7 +8%	93.8 +3%	94.7 +1%
MANUFACTURING BUILDINGS	11.4 -6%	8.9 -22%	8.2 -8%	6.0 -26%	6.4 +6%

Source: McGraw-Hill Construction



The RISD Center will have studios on the top three glass-enclosed floors.

oneo designs RISD Center as beacon for the Providence school

Rhode Island School of Design SD) unveiled plans in October for RISD Center, a 60,000-square- t multipurpose facility designed Rafael Moneo.

The six-story building will lude a 225-seat auditorium, café, d classroom and studio spaces. vill also serve as the new North in Street entrance to the adjacent RISD Museum, which now faces Benefit Street, uphill from the project site. A lobby escalator will take visitors to a third-story special exhibitions gallery, which connects via glass bridge to the Radecke Building, the main facility of the four-building museum. Student galleries will be located on the second level of the RISD Center, and the museum's department of prints, drawings, and photographs will be housed on the fourth floor. Ground breaking on the $30 million project is expected in fall 2004.

Because the RISD Center expands and reconfigures the museum, Moneo calls the design "so contextual that it helps to restructure the entire block, giving a sense to this conglomerate of buildings, something like a keystone." The museum will undergo $16 million in additional renovations to improve circulation.

Moneo explains that he intended the new building's facade to "produce a rather consistent urban episode." The three lower stories will be clad in brick, and the massing of each floor echoes the scale of the many neo-Georgian structures on North Main Street.

The upper three stories of studio spaces, wrapped in scalloped glass laminate, will glow lanternlike at night as a "new projection of RISD," as Roger Mandle, president of RISD, put it. *David Sokol*

OFF THE RECORD

Ending months of speculation, the Art Gallery of Ontario announced that Frank Gehry, FAIA, will design its $116 million expansion. It is Gehry's first project in his native Toronto. Construction will likely begin in 2005, with completion in 2007.

The husband-and-wife team of Robert Venturi, FAIA, and Denise Scott Brown, RIBA, were honored as recipients of The Vincent Scully Prize in a December 8 ceremony at the National Building Museum.

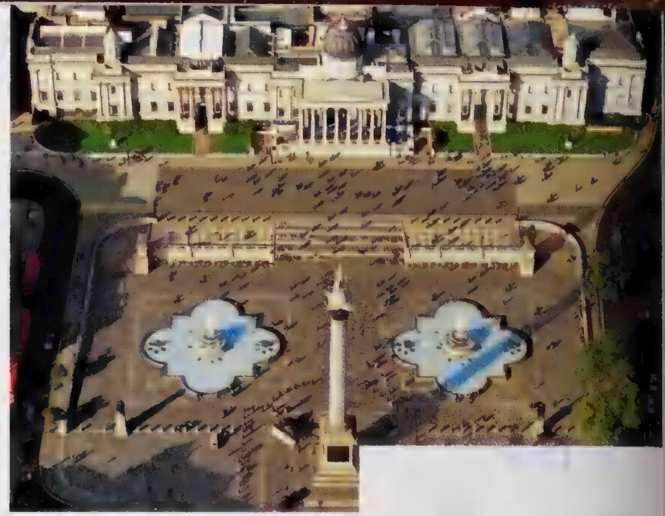
Cornell University has selected Barkow Leibinger Architects of Berlin for a new building for its department of architecture. Other firms under consideration were Tod Williams Billie Tsien and Associates, Thom Mayne of Morphosis, Smith-Miller + Hawkinson Architects, and Allied Works Architecture. The university had selected Steven Holl for the project in April 2001, but that relationship was dissolved this summer.

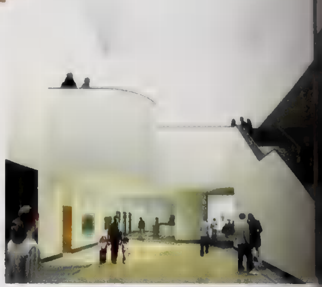
Japanese architect Arata Isozaki has been selected to design a 15,000-seat indoor hockey arena for the 2006 Winter Olympics in Turin, Italy. Construction is scheduled to begin in the first half of next year and be completed by February 2005. The arena is expected to cost $40 million.

Foster and Partners, with Arup, has won a competition for a railway station in Florence for Italy's new high-speed rail network. Other firms under consideration for the project were Arata Isozaki, Santiago Calatrava, Foreign Office Architects, Zaha Hadid Architects, the German practice von Gerkan Marg und Partner, and Italian-based Gruppo Toscana.

Curt Green, FAIA, cofounder of Minneapolis-based Hammel Green and Abrahamson, died at age 77. Working with Hardy Holzman Pfeiffer Associates, Green was the local architect on Orchestra Hall in Minneapolis.

New entrance for U.K.'s National Gallery





The gallery will have a new entrance off Trafalgar Square (above), leading to a new atrium (right).

London's National Gallery, under its new director Charles Saumarez Smith, has unveiled plans for a radical facelift to handle its four million annual visitors. London's Dixon.Jones, the practice behind the renovation of the Royal Opera House, has designed a master plan for the expansion of the Neoclassical landmark.

Phase one is the East Wing Project, a $35 million scheme that will create a new entrance from Trafalgar Square, increased gallery space, and improved public areas on the ground floor at the east end of the building toward the church of St. Martin-in-the-Fields.

The East Wing Project coincides with Lord Norman Foster's scheme for the pedestrianization of the north side of Trafalgar Square (see image at top), completed last September, which includes a new set of steps by Lord Foster.

The new East Wing entrance will be on the gallery's ground floor, which currently houses administration and storage facilities. The entrance will lead visitors into a new skylight-topped atrium (right) created within a previously hidden courtyard at the heart of the building. A café and shop, designed by London design consultant Din Associates, will be on either side of the atrium. Stairs and elevators will lead visitors to the Central Hall, a substantial new exhibition space.

Dixon.Jones' master plan covers an unspecified number of future phases, including the mirror image West Wing Project and the redevelopment of the lower floor at the back of the building, where two courtyards that are now hidden could be exposed.

The gallery currently has funds only for the East Wing Project, thanks largely to a $16.5 million donation from the Getty Foundation in honor of Sir Paul Getty.

The last major addition to the National Gallery was the Sainsbury Wing, just off Trafalgar Square, designed by Venturi, Scott Brown & Associates and completed in 1991.

Construction of the East Wing will begin in late spring 2003, with completion set for the beginning of 2005. *Adam Mornement*

Cloepfil, Allied Works selected for New York museum

The Museum of Contemporary Art and Design (formerly the American Craft Museum) has selected Portland, Oregon–based Allied Works Architecture, led by Brad Cloepfil (left), to renovate Two Columbus Circle (right) for the museum's new home in New York City. The building was designed by Edward Durell Stone in the early 1960s and has been vacant since 1998.

Allied Works Architecture was one of four firms on a short list (see story, this issue, page 72) for the $25 million project with Smith-Miller + Hawkinson Architects, Zaha Hadid, and Toshiko Mori. The museum had culled those four from a list of 11, including William Bruder Architect, Kennedy Violich Architects, Koning Eizenberg Architecture, Lake/Flato Architects, Peter Marino & Associates Architects, Office dA, and Wendy Evans Joseph. "We were really looking for firms that were emerging, in the same way that the museum is about emerging artists," said Laurie Beckelman, director of its new building program.

New Yorkers wonder if Cloepfil will propose puncturing the blank facade facing Columbus Circle with windows. Cloepfil is trying to gauge reaction before developing a schematic design. "I want to talk to a lot of people in New York," he said, "about what they think about that building and what it means to the city." *J.E.C.*

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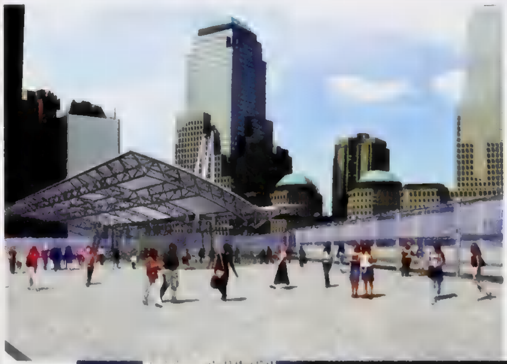
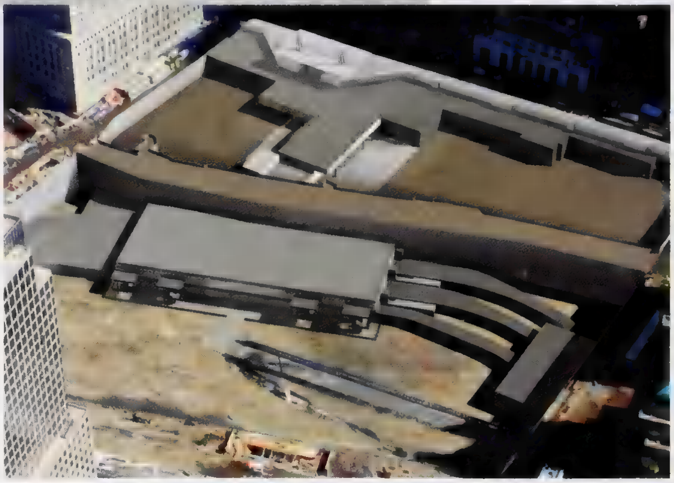
SPECIAL REPORT

Plans move rapidly on temporary commuter train station at WTC site; more firms in mix

With work on a replacement PATH commuter train station already under way, the reconstruction of the World Trade Center (WTC) site has commenced in earnest. Yet the overall urban design process is moving behind the pace projected only a few months ago. Leaders involved with the revitalization of Lower Manhattan discussed this oscillation between urgency and delay during a panel at the 18th annual Build Boston convention on November 12.

The event was moderated by Ric Bell, FAIA, executive director of AIA New York, and panelists were Jill Lerner, AIA, a principal at Kohn Pedersen Fox and former cochair of the New York New Visions memorials committee; Mark Ginsberg AIA, of Curtis + Ginsberg and a cochair of the executive committee of New York New Visions; Robert Davidson, FAIA, chief architect of the Port Authority of New York & New Jersey; Hugh Eastwood, a planner for the Lower Manhattan Development Corporation (LMDC); and Steven Peterson, AIA, of Peterson/Littenberg Architecture and Urban Design, a consultant to the LMDC.





The photomontage (above) depicts the temporary PATH station that will be complete in a year, including an entrance canopy (top) on Church Street.

To date, the pressing germ of revitalization has been transportation—as Davidson put it, conceiving plans "from the bottom of the site up." According to Lerner, that has been a necessary course to take: "Everybody recognizes this is the right priority, even if it impacts future options, so long as it does so as flexibly as possible." With the need to retain businesses in the area, Davidson and the Port Authority have focused on restoring PATH service as quickly as possible by rebuilding the tracks as they were, utilizing portions of the WTC's concourse that remain intact, and creating a temporary station (shown here) atop the existing foundations of the previous one. As part of a $544 million upgrade to the PATH system (which includes renovations of the once-flooded tunnels below the Hudson and track improvements at Exchange Place in New Jersey), the new WTC temporary facilities will be capped by a canopy of metal trusses and tension cables that will face Church Street. Construction of the temporary station will be complete in December 2003.

Davidson also unveiled initial studies for permanent improvements to the site's infrastructure (but the Port Authority was unwilling to release images for publication at press time) to include a new and much larger hub to replace the temporary facility. Rising several stories above ground, this glass structure will provide direct visual connections from Church Street to the PATH platforms four levels below. The hub will link eastward to the MTA's proposed transit center at Broadway and Fulton streets via a new pedestrian concourse running beneath Dey Street. The concourse will also extend westward across the WTC site to the World Financial Center's Winter Garden. From here, commuters will be able to connect to a ferry terminal located on a floating barge in the Hudson River. The ferry terminal is expected to be complete in mid-2004.

In contrast to the speed of rebuilding the PATH station, the LMDC has backed away from its original timetable that predicted designation of a final land-use plan this year. The agency's revised process calls for seven master-planning proposals from the six new design teams that were selected in October [RECORD, November 2002, page 28] and from Peterson's firm—to be released by mid-December.

Waiting for Ground Zero

ARCHITECTURAL RECORD will present a panel discussion—*Waiting for Ground Zero*—about the latest round of proposals for the World Trade Center site commissioned by the Lower Manhattan Development Corporation and the Port Authority of New York & New Jersey. Panelists will include participants in the design study, as well as commentators on the process. The event will be on Tuesday, January 7, at 6:30 P.M., in the McGraw-Hill Auditorium, 1221 Avenue of the Americas, New York City. For more information about the event, including speakers and reservations, visit www.archrecord.com.

In mid-November, three New York-based architecture firms were hired as consultants to perform specific studies for the LMDC for $50,000 each: Weiss/Manfredi, Robert A.M. Stern Architects, and Smith-Miller + Hawkinson. The selection of Stern's firm raised immediate questions among New York architects of a possible conflict of interest because Stern is the dean of Yale's School of Architecture and Alex Garvin, the LMDC's vice president of planning, design, and development, is an adjunct professor in that school.

Peterson/Littenberg, which has been an in-house consultant to the LMDC since spring, had its contract extended for three years. Beyer Blinder Belle continues its work for the LMDC, and Ehrenkrantz, Eckstut & Kuhn Architects are urban design advisers to the Port Authority.

Mark Pasnik with J.E.C.

WWW For continuing updates on the planning of Lower Manhattan, visit our special section at **architecturalrecord.com**

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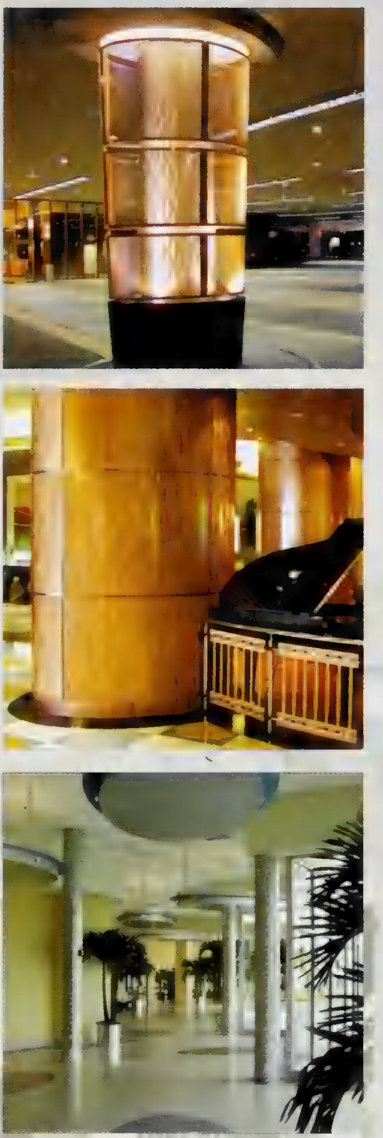

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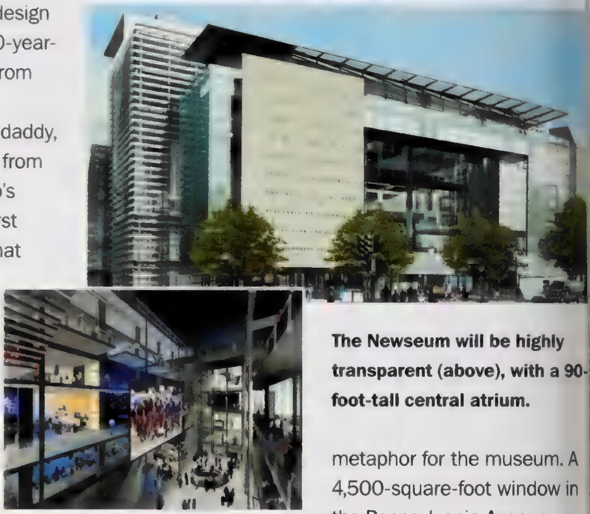
Moynihan beams as Polshek unveils Newseum design for D.C.



The Newseum will be highly transparent (above), with a 90-foot-tall central atrium.

At a late-October unveiling of the design that will complete build-out of a 40-year-old plan for Pennsylvania Avenue from the Capitol to the Treasury, Daniel Patrick Moynihan, the plan's granddaddy, was all smiles. The former senator from New York said Polshek Partnership's design for a museum about the First Amendment will fulfill the dream that "this vast, unformed, cluttered expanse," as President Kennedy described the avenue in the early 1960s, would become "lively, friendly, inviting, as well as dignified."

Located across from the National Gallery and next to the Canadian Embassy, the 531,000-square-foot, $400 million Newseum complex will bridge monumental Washington and downtown to the north, said James Stewart Polshek, FAIA. His firm's design includes 145,000 square feet of condominiums facing C Street; 84,000 square feet of office and conference space for the Newseum's sponsor, Freedom Forum; and, at street level, 30,000 square feet of retail that will create a "gateway" corner at Sixth Street, as Polshek calls it. The museum portion will occupy 215,000 square feet of space and will likely open in 2006.

"Transparency equals democracy," said Polshek, who has made that concept the metaphor for the museum. A 4,500-square-foot window in the Pennsylvania Avenue facade will give passersby views of galleries, a central atrium, and a 30-by-50-foot media screen projecting breaking news. The facade will feature a 65-foot-high plaque engraved with the first 45 words of the First Amendment.

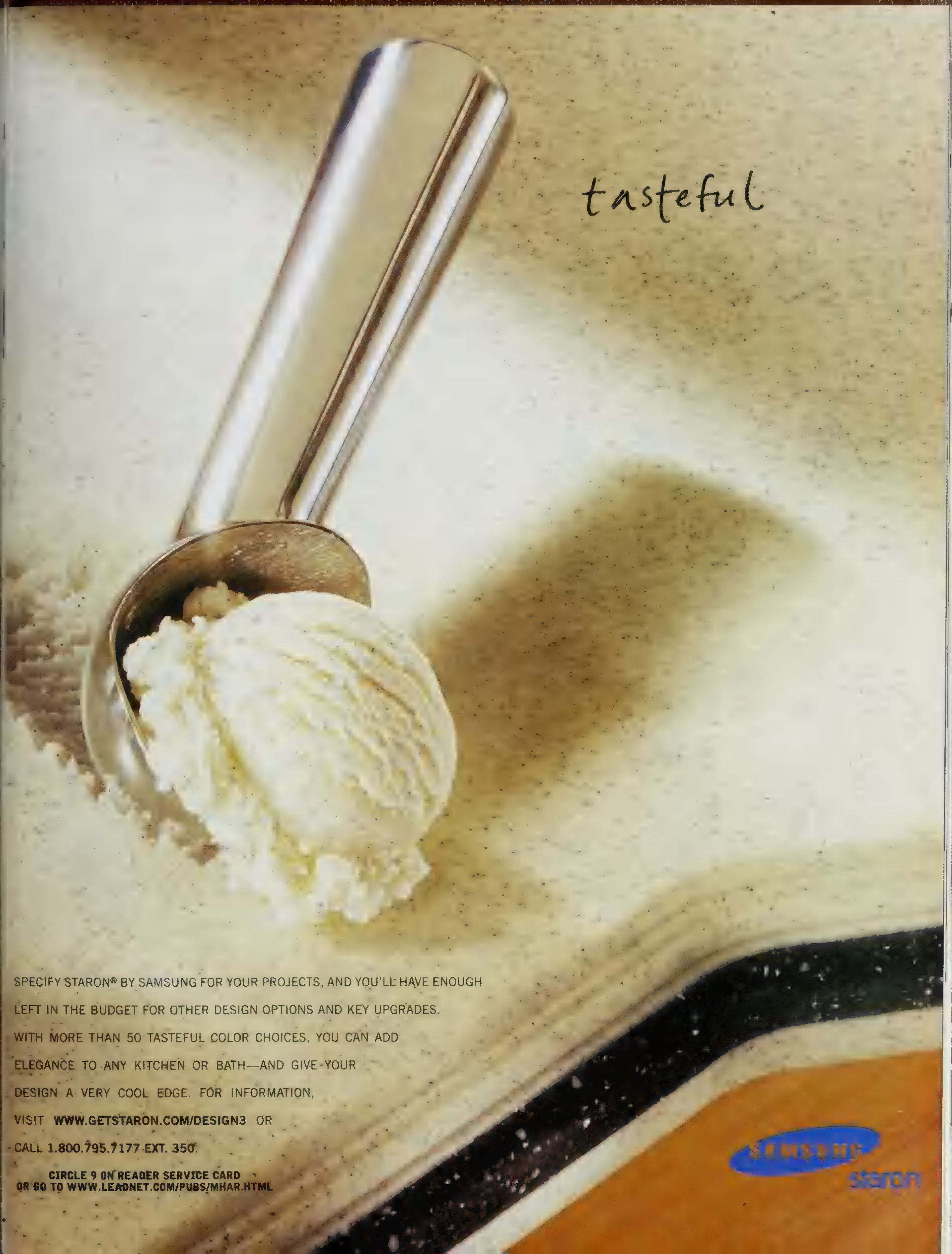
The architects configured the building as three layers that grow in height as they recede from the avenue. The layer closest to the avenue will contain a café and terrace. The middle layer will house the 90-foot-high atrium surrounded by exhibition galleries. In the highest layer there will be exhibits that don't need daylight, including a newsroom and a demonstration broadcast studio. *Andrea Oppenheimer Dean*

Foundation starts $125 million affordable housing campaign

The Enterprise Foundation of Columbia, Maryland, a nonprofit organization, is launching a nationwide $125 million, five-year fund-raising campaign with a plan to renovate as many as 70,000 homes in poor communities across the country. Enterprise has already raised $70 million toward that goal. A parallel campaign aims to establish an endowment for the organization.

The Enterprise Foundation was founded in 1982 by James Rouse and his wife, Patty. Rouse, who died in 1996, achieved fame for his work in planning Columbia, as well as the revitalization of Boston's Faneuil Hall; Baltimore's Harbor Place; and New York City's South Street Seaport. The foundation addresses urban revitalization by funding affordable housing development. The current campaign would be Enterprise's most ambitious—previous drives had goals of $25 and $75 million. "I think Jim Rouse would be pleased," said Bart Harvey, Enterprise chair and C.E.O., "though I never knew him to be pleased about anything for long. He was always moving on to the next project."

The biggest donors so far in this campaign are the Federal National Mortgage Association—known as Fannie Mae—and the philanthropists Lewis and Dorothy Cullman. The actor Edward Norton, a grandson of Rouse, serves on Enterprise's board. The New York premiere of Norton's movie *Red Dragon* also served as a fund-raiser for the organization, bringing in $100,000. "Both he and Salma Hayek have been great," Harvey said. "And they've been contributors." ***Kevin Lerner***



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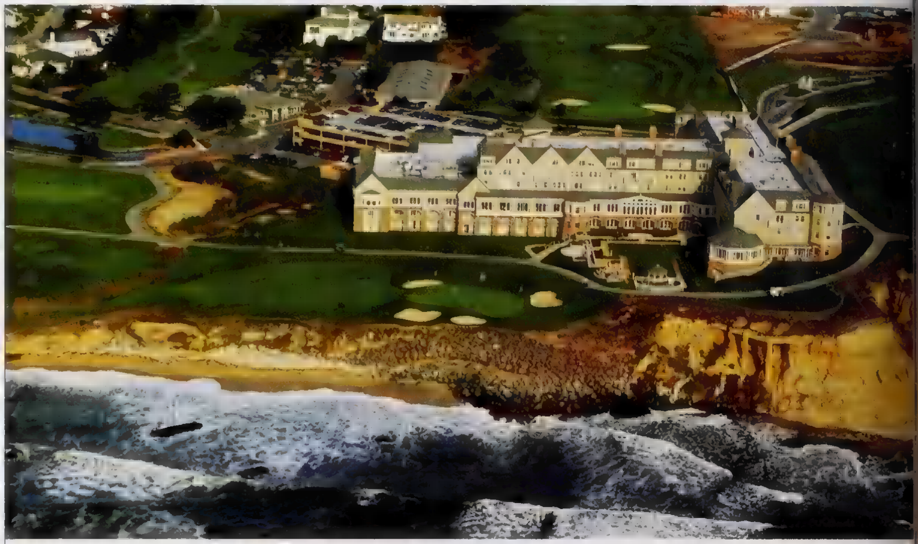

Entire California coast documented and on the Internet

Although a convertible and lots of free time may still be the best way of viewing the mythic California coastline, there is now an easier, quicker way. Ken Adelman, an enterprising former computer executive, has spent the past six months flying above the entire California coastline taking over 10,000 high-quality digital photographs that document the state of the shore today. Concurrently, he has set up a Web site, www.californiacoastline.org, to display the images to anyone who is interested.

A Caltech graduate, Adelman, 39, founded two computer companies that he sold in the 1990s to Cisco and Nokia. Once retired, Adelman began looking for ways to pursue his interest in environmental causes. Some project work for the Sierra Club convinced him that surveying the entire California coast would not only be possible, but in the best public interest. "People won't conserve what they don't love," says Adelman.

For a typical shoot, Adelman removes the doors from his Robinson R-44 helicopter and, with his wife, Gabrielle, at the controls, flies at about 500 feet altitude just offshore. Cruising at a leisurely 40 mph, Adelman leans out the door and takes a photo every three seconds with a Nikon D1x digital camera. Cables link the camera to the aircraft's global positioning system and to an Apple PowerBook laptop, which records each image along with exact latitude and longitude.

With the project 90 percent complete (Adelman is awaiting permission to photograph in restricted airspace around Vandenburg Air Force base), awareness is growing fast. Already, conservation groups have used some of the images (including the one at the top of this page) to force developers to remove illegal dumping.

Adelman is donating commercial rights to the photos to environmental groups and plans to update the images of imperiled areas every two years. *David Maurer*

Environmentalists used the top image to argue that a developer had put boulders on a public beach without a permit. Other aerial shots: Los Angeles Airport (middle) and Rancho Palos Verdes (above).

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News Briefs

The Tampa Museum will have a cantilever trellis.

Viñoly redesigns Tampa museum Rafael Viñoly has altered his design for the new Tampa Museum of Art in response to community pressure. The building's 100-foot "urban canopy" will be replaced by a cantilever-style trellis attached to the roof of the museum.

After unveiling the design in June [RECORD, August 2002, page 28], critics cited that the original canopy, which would have required support columns placed in the median of adjacent Ashley Drive, posed a traffic hazard and would deter pedestrian activity. The new canopy wraps around the back of the building, shading galleries and outdoor terraces.

Viñoly is also reworking interior plans in order to add a glazed, double-sided lobby to the museum's ground floor. Construction of the $52 million project is expected to begin next year, with completion scheduled for 2004.

Charles Mount, acclaimed restaurant designer, dies at 60 Known for his use of theatrical effects in designing more than 300 restaurants, New York restaurant designer Charles Mount died of a heart attack on November 8. Mount worked for furniture designer George Nelson before opening his own firm in the early 1970s. He designed a 17,500-square-foot triplex McDonald's that opened this year in New York City's Times Square.

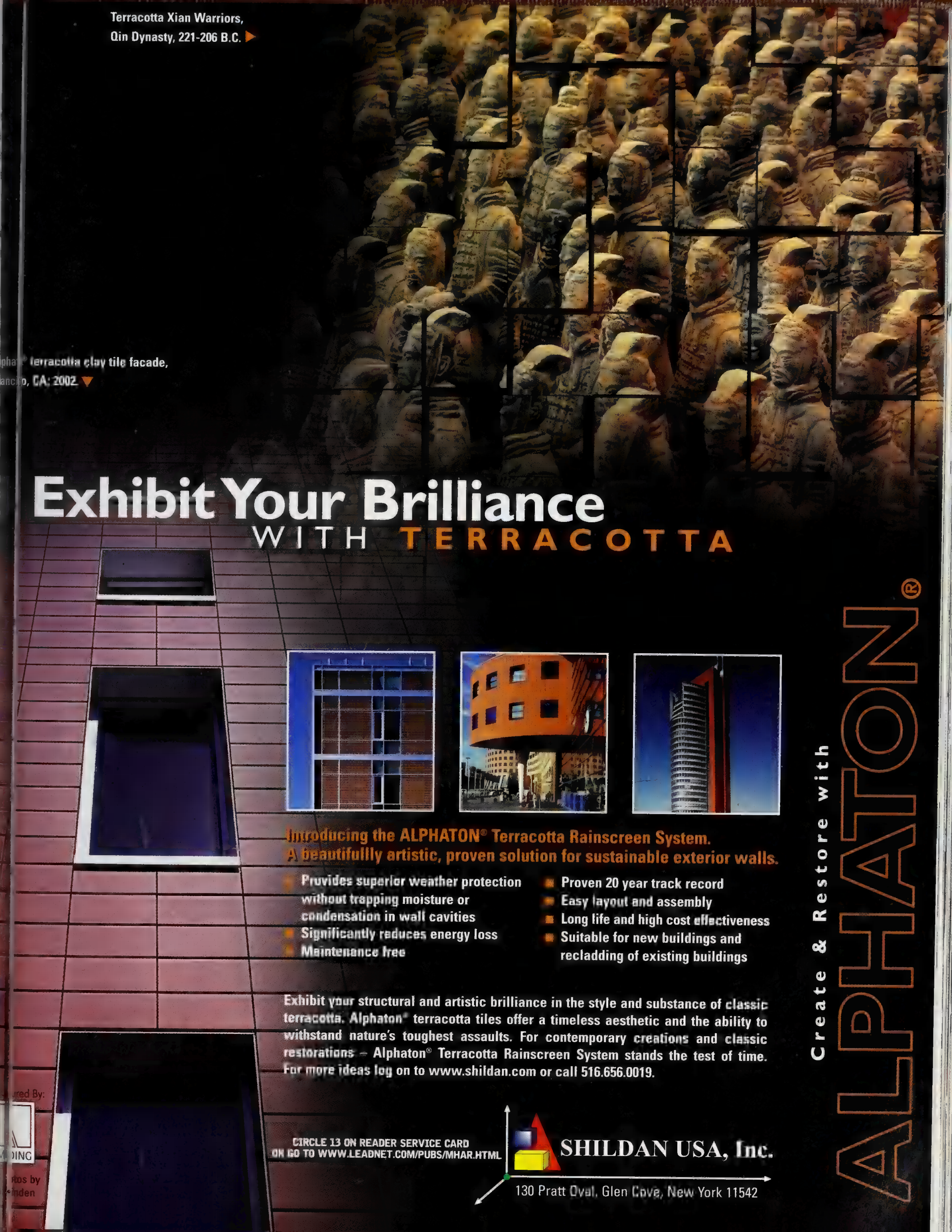
Architects win elections AIA-member architects won elections in four states on November 5. Charles Clary (R), FAIA, and Eric Johnson (R), FAIA, were reelected to the Florida Senate and the Georgia Senate, respectively. Ohio AIA president Chris Widener (R), FAIA, also reclaimed his seat in the Ohio House of Representatives. Joe Sam Queen (D), AIA, won a newcomer bid to the North Carolina Senate. Robert Smith (R), AIA, president-elect of Marylan AIA, lost the election for a seat in the Maryland House of Delegates.

Polshek commissioned for new museu of American Jewish history The National Museum of American Jewish History has announced that it will construct a new, $100 million, 80,000-square-foot facility (below) in Philadelphia. Designed by Polshek Partnership Architects, New York, the five-story glass-and-stone structure will be located on Independence Mall East, replacing much of the museum's existing two-story, 13,000-square-foot brick building on the site. The project features a signature 100-foot stone tower topped by a glass-encased, 8-foot-high "eternal flame." The new venue will house permanent and temporary exhibition spaces, plus an auditorium and a resource center. Scheduled t break ground in late 2004, the museum will open in 2006. *Tony Illia*

Jewish museum by Polshek.

Welsh Assembly reaches settlement with Rogers Richard Rogers Partnership (RRP) will receive an outstandin payment of $739,000 for its work on the new headquarters of the Welsh Assembly [RECORD, September 2001, page 33]. The decision follows an adjudication by Sir John Bourn, the auditor general for Wales, who also found that the assembly is entitled to retain RRP's design. The assembl will select one of two short-listed contractors in January to bid for the right to construct the building. RRP won a competition to design the Welsh Assembly in 1998 but was dismissed in July 2001 after the design was complete. The relationship deteriorated as project costs rose from $21.8 to $43 million. The assembly hopes to have a new building by the end of 2005. *A.M.*

The Welsh Assembly headquarters, designed by Rogers.



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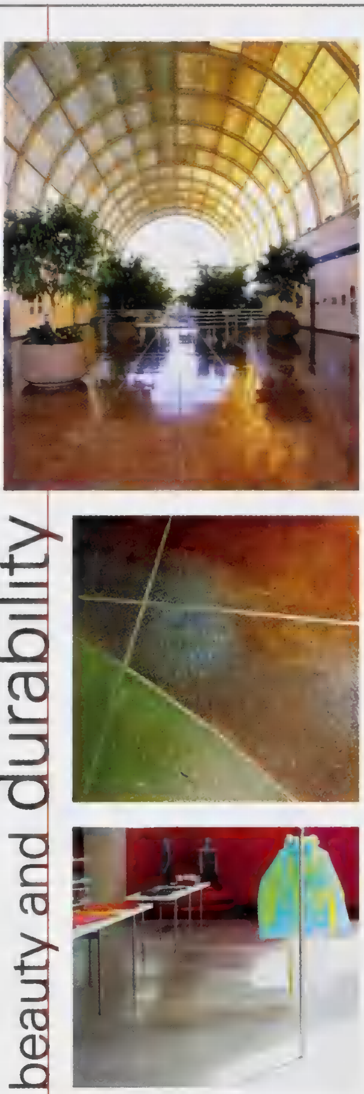

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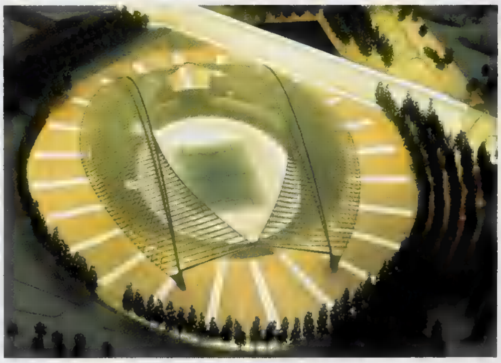
News Briefs

Sagaponac prices announced Prices have been announced for the first of nearly 40 homes that are planned by developer Coco Brown for a site in Sagaponac on Long Island, New York. As RECORD has reported [October 2002, page 49; April 2001, page 27], construction has begun on the first homes, including the home designed by the late Samuel Mockbee, which has a $4.5 million price tag. Other homes under way are by Gisue and Mojgan Hariri ($2.8 million), Marwan Al-Sayad ($2.25 million), Stephen Kanner ($2.2 million), Lindy Roy ($2.2 million), Shigeru Ban Architects and Dean Maltz Architect ($2.15 million), Richard Gluckman ($1.9 million), Annabelle Selldorf ($1.85 million), Henry N. Cobb ($1.65 million), and Stan Allen ($1.575 million). *J.E.C.*

Athens stadium may not be completed in time for 2004 Olympics After construction delays at the main stadium for the 2004 Olympic Games prompted rumors of the project's cancellation, senior members of the International Olympic Committee have stated that the project will be completed in time for the event. The stadium (below), designed by Spanish architect Santiago Calatrava and located in Athens, was originally scheduled for completion several months before the start of the games, on August 13, 2004.

Even if opened in time for the Olympics, however, published reports suggest that delays will preclude the completion of the 80,000-seat stadium's roof. The roof is designed as a sunscreen, in which strands of translucent glass would be threaded between the beams of two 300-meter steel arches. Calatrava has called the stadium project his "Olympic dream."


Athens stadium design includes a translucent sunscreen.

Day-tripping at Calatrava's Milwaukee museum The pedestrian bridge linking the Milwaukee Art Museum (MAM) [RECORD, March 2002, page 92] to the city's downtown has not been very pedestrian-friendly. Two elderly women tripped on the raised granite plinth underneath the cable stays, broke their hips, and filed insurance claims against the museum. The museum has not disclosed the amount of the claims, and the insurance company has required the museum to install a temporary wooden railing (below). Milwaukee architecture firm Kahler Slater, the architect of record for the project, is working with the museum and Calatrava to come up with a permanent railing that will be "minimally invasive," according to Lou Stippich, AIA, who was the project manager for MAM. Preliminary plans call for a simple, single-rail handrail under the cables, at a cost of approximately $25,000 to $50,000, Stippich said. *J.E.C.*

A temporary railing at the Milwaukee Art Museum.

CABE to champion urban green space in England The Commission for Architecture and the Built Environment (CABE), the executive unit of the British Parliament that champions high-quality architecture, will establish a new branch to promote excellence in urban design. The task force, called CABE SPACE, will focus its efforts on improving green spaces in towns and city neighborhoods through skills training and community involvement. The organization will also pursue its goals through England's Housing Market Renewal program. CABE SPACE will soon launch a national campaign to raise public awareness of the need to improve urban public space.

CABE SPACE's launch was announced at October's Urban Summit in Birmingham, England, and it comes on the heels of CABE's "Streets of Shame" campaign, which highlighted the public's interest in creating roads. *News Briefs by David Sokol, unless otherwise noted.*

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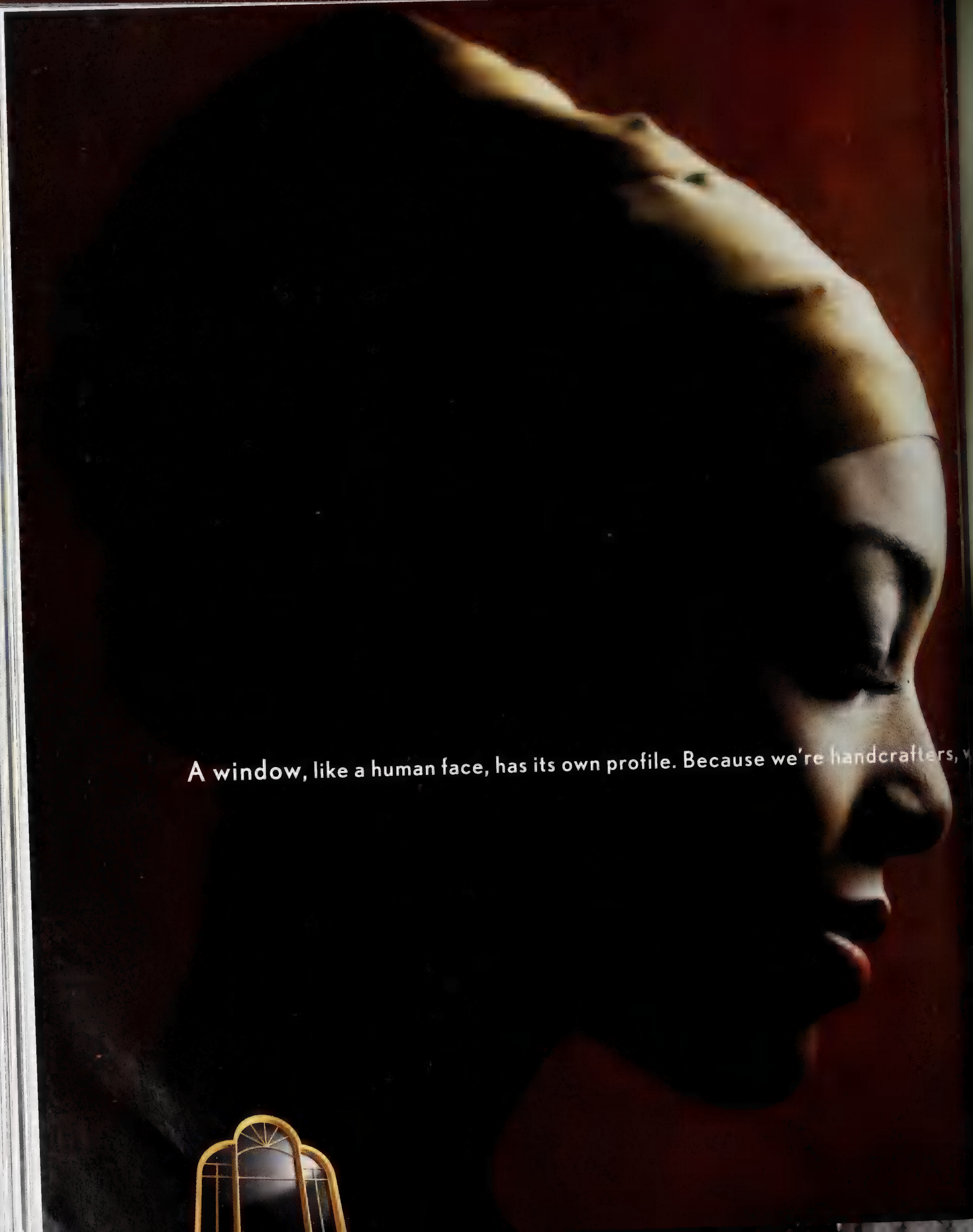
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Dates & Events

ew & Upcoming xhibitions

itical Mass: An Exhibition of chitecture, Art, and Design
troit
vember 9–December 20, 2002
the cultural center of Detroit lies [Flak], a ovement of architects and other creative types ose work addresses political, social, and aes- etic issues. The show exhibits a range of chitectural work that presents Detroit as a city h a deep and relevant cultural community. At e Museum of New Art. To learn more, call 8/489-6440 or visit www.detroitmona.org.

lward Tufte: Escaping Flatland
s Angeles
vember 8, 2002–February 13, 2003
fte's work is involved with graphic representa- ns of abstract ideas, 3D forms, and statistics. is exhibition highlights the artist's visual tech- ques on the "flatland" of the 2-dimensional ge, with prints from his forthcoming book. At e A+D Architecture and Design Museum. Call 23/871-2877 or visit www.aplusd.org.

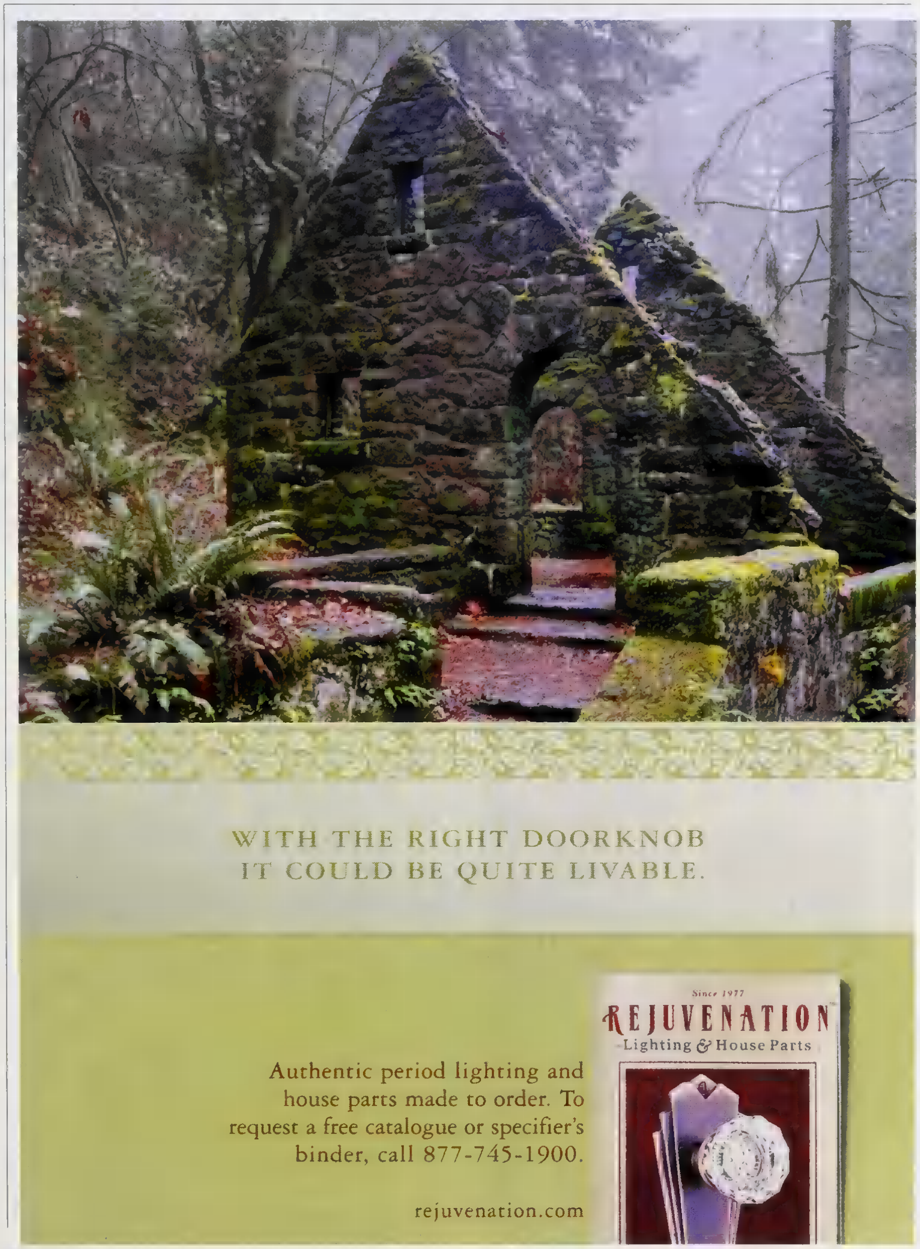
rchitecture + Water
an Francisco
ovember 16, 2002–March 23, 2003
the grand tour for 18 months, this exhibition is made its way to the Pacific. The theme is chitectural design that exploits, uses, admires, in the case of Diller + Scofidio, *is* water. With awings, models, and animations of work by + S, Foreign Office Architects, MVRDV. Steven oll, and Alsop Architects. At the San Francisco useum of Modern Art. Call 415/357-4000 visit www.sfmoma.org.

ays of Producing: Italian Creativity and esign
anta Monica, California
ecember 3–21, 2002
is exhibition features the work of Italian firms ich as Boffi, B&B Italia, Kartell, Artemide, sazza, and Rubelli, created by world-renowned esigners including Philippe Starck, Ross ovegrove, Gae Aulenti, and others. At the Track 16 allery, Santa Monica. For information, contact e Italian Trade Commission in New York at 12/848-0332 or e-mail newyork@newyork.ice.it.

Big & Green: Toward Sustainable Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately 50 contemporary green projects worldwide, along with a broad examination of global ecological and economic forces, the exhibition will demonstrate the transformative powers of sustainable design. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Ongoing Exhibitions

Herzog & de Meuron: Archaeology of the Mind
Montreal, Canada
October 23, 2002–April 6, 2003



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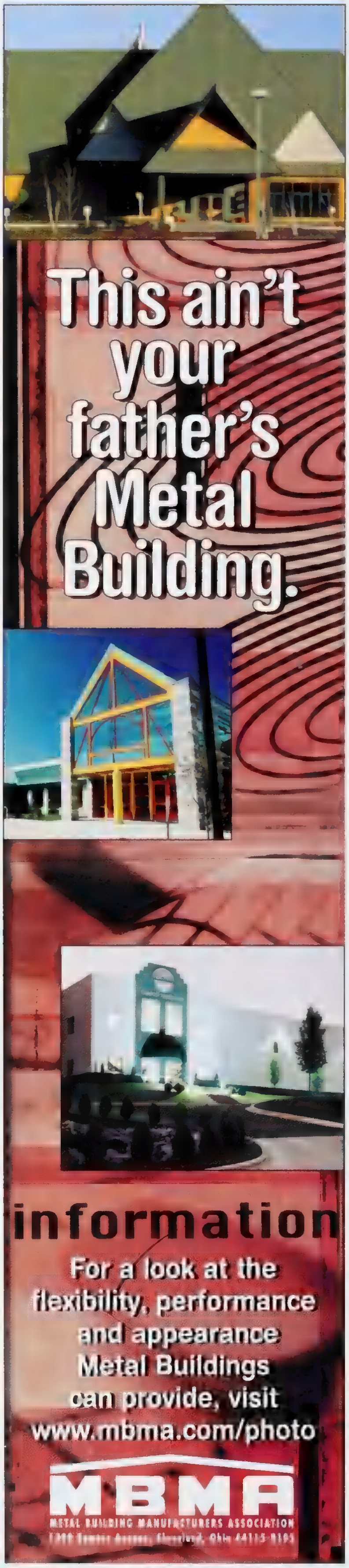
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Dates & Events

"Since architecture itself cannot be exhibited, we are forever compelled to find substitutes for it," said Jacques Herzog regarding this exhibition (which he and Pierre de Meuron curated in collaboration with Philip Ursprung). The substitutes on display are plentiful and plenty strange—any object that has served as a source of information for the architects. At the Canadian Centre for Architecture. Call 514/939-7000 or visit www.cca.qc.ca for more information.

New New York 3: Multiples: Small Civic Works
New York City
October 26, 2002–January 2, 2003
This is the third in a series of exhibitions on significant new buildings, interiors, and landscapes in New York City. The projects in this exhibition—elementary school libraries, community centers, ferry piers—all demonstrate the power of inventive design to elevate the activities of daily life. At the Architectural League of New York. Call 212/753-1722 or visit www.archleague.org.

Tadao Ando: Architect
Williamstown, Massachusetts
September 28, 2002–April 27, 2003
Featuring an installation designed by the architect himself, with models, drawings, prints, and videos. Since Ando has been chosen as the architect for the Art Institute's expansion and campus enhancement, the show is for trustees and architects alike. At the Clark Art Institute. For information, call 413/458-2303 or visit www.clarkart.edu.

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American housing and its products, with cultural insinuations regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org for more information.

New Hotels for Global Nomads
New York City
October 29, 2002–March 2, 2003
With a title that sounds like a Koolhaas co-optation, this exhibition about hotels describes them as symbols of contemporary leisure. With a focus on opulent, Vegas-style hotels with gimmicks, attractions, and new domestic technologies, the show places these heavily designed spaces in historical context (decadent hotel design actually dates back to 1829, in Boston). At the Cooper-Hewitt National Design Musuem; call 212/849-8400.

Krier/Eisenman: Two Ideologies
New Haven
November 4, 2002–February 7, 2003
The debate between the opposing architectural philosophies of Krier and Eisenman is the subject of this exhibition. Work by Krier, who focuses on considerations of context, site, and function to inform his designs, will be displayed across from Eisenman's, who regards abstract form as the architect's singular consideration. At the Yale School of Architecture. Contact 203/432-2288 or visit www.architecture.yale.edu.

David Adler, Architect: The Elements of Style
Chicago
December 6, 2002–May 18, 2003
This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models and decorative arts. Also included will be major documents from the Art Institute's permanent collection and photos newly realized by the renowned Chicago architectural photography firm of Hedrich-Blessing. At the Art Institute of Chicago. Call 312/443-3600 or visit www.artic.edu.

Conferences, Symposia, Lectures

Dallas Architecture Forum Lecture Series
Dallas
November 21, 2002–February 13, 2003
The Dallas Architecture Forum features its seventh season of lectures by some of the most important designers in the world. Included in the series will be talks by Enrique Norten, Rick Joy, and Terence Riley. For information, call 214/740-0644 or visit www.dallasarchitectureforum.org.

Competitions & Awards

The Rudy Bruner Award for Urban Excellence
Call for entries deadline: December 16, 2002
The award is given to real places (built architecture only) that make a positive contribution to their urban environment. There are no distinct categories, but the award is limited to the continental U.S. Visit www.brunerfoundation.org.

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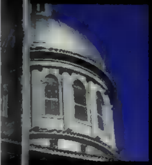

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Final deadline: January 17, 2003

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Excellence in Gypsum Board Design & Construction Awards

Deadline: December 31, 2002

Innovations in standard building materials is one of the marks of a good designer. The Gypsum Association—a 72-year-old organization—will hand out $3,000 in prizes and plaques for residential and nonresidential design categories. Entries are accepted as project teams for three professional categories: builder or general contractor, architect or designer, and dry-wall contractor. Deadline for entries is December 31, 2002—and the first 40 qualified entries get a $250 bonus. Contact the Gypsum Association at www.gypsum.org.

9th Annual AIA London/U.K. Chapter Excellence in Design Awards

Deadline for submissions: January 22, 2003

The American Institute of Architects, London/U.K. Chapter seeks entries from British-based architects, as well as from architects throughout the world, for built projects in the U.K. In parallel, the chapter seeks entries for the Student Travel Awards, which honor work from students currently enrolled in U.K. universities. For information, either visit www.aiauk.org or send e-mail to designawards@aiauk.org.

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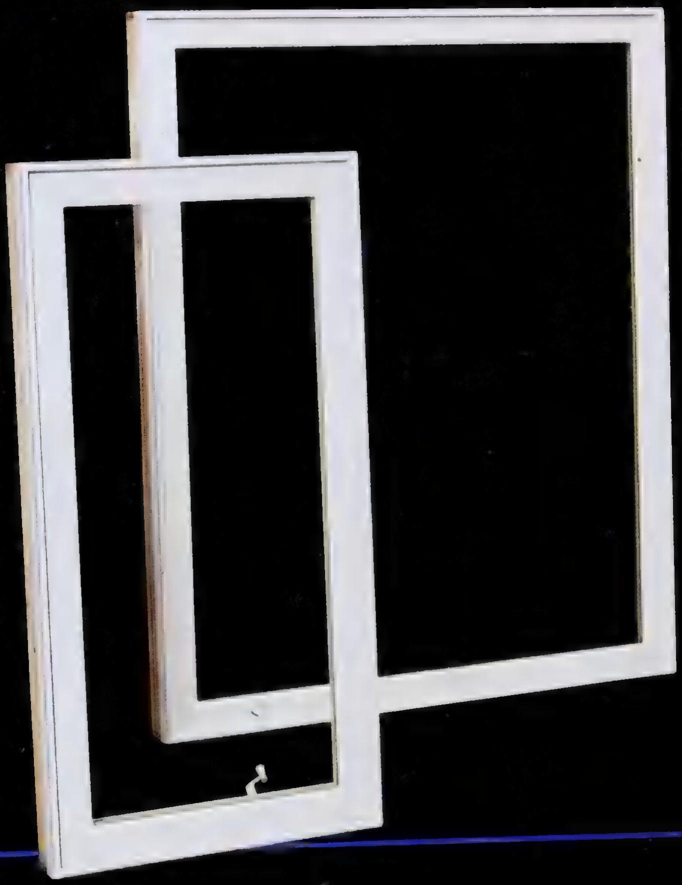

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archrecord2

FOR THE EMERGING ARCHITECT

is month, **archrecord2** takes a break from its usual schedule of presenting **Design** portfolios
om a single firm, in deference to the annual Design Vanguard presentation. Instead, we present
portfolio of single projects from four different architects from all over the country. Plus, in
ork, you'll find a discussion with two of the Design Vanguard firms about how they present
eir work to clients. And as always, you'll find **Live** and **Talk** on our Web site.

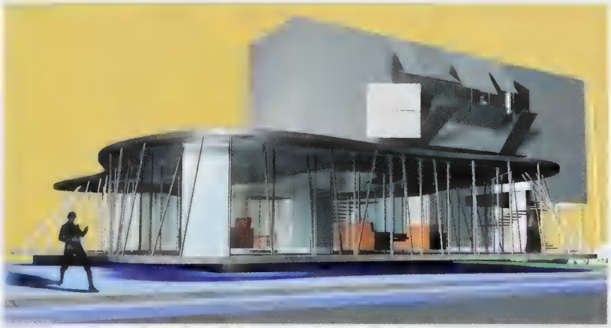
ESIGN

portfolio of unbuilt projects

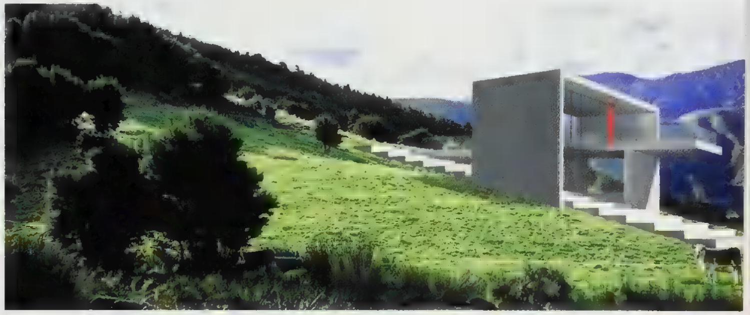
e Evergreen Chapel was designed for a real site in Forest Grove, Oregon, and
a real client. There was a real program, too, though the program didn't come
m the client. It was a fantasy project for the real world, and part of the mar-
ting plan for a small firm called architecture w, which has offices in Portland,
egon, and Nagoya, Japan. "The chapel is part of what we call our 'Office
rategy One,' " said Brian White, one of the firm's two principals (Michel
eenick is the other). "We know the types of buildings we want to pursue, and
knew of this congregation, so we just picked a site and guesstimated a pro-
am." The resulting chapel is a simple white box oriented to capture the fil-
red light of the forest and a view of a cross, set in a clearing. The intended
ngregation, as it turned out, could not afford the building, but now architec-
re w has a model that the firm can use to sell itself to other congregations.

Gail Peter Borden also began work on his Rubber-banded House for a real
ent who didn't necessarily want the work done. Borden knew of a vacant lot
vned by a developer who planned to build a speculative house on the land. "I
anted to try to design something while the land was still a clean slate," Borden
id. The project also dovetailed with Borden's research work, which focuses on
e nature of the suburban landscape. The developer chose to build a standard
uburban house on the lot instead of Borden's design, which features interlock-
g horizontal and vertical "courtyards" and interior walls made from rubber
ands. The house did, however, win the architecture category of the 100%
ubber competition, sponsored by Dalsouple Rubber.

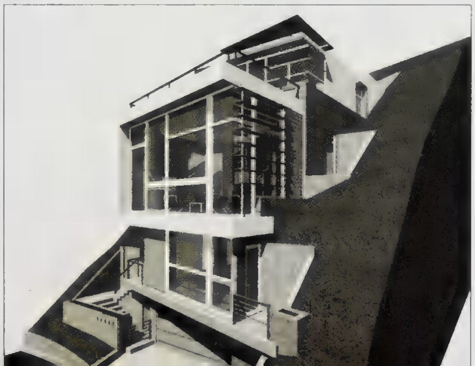
Pacific Palisades Residence, by paastudio, was designed for a more
actical purpose: It will be both the home and office of its
esigners, the husband-and-wife team of Ivo and Teo Venkov.
neir contemporary design for the house had trouble passing
e Coastal Commission's review board. "The predominant



Rubber-banded House, Raleigh, 2001
Borden Partnership. This house experiments with the separation of public and private, but it also plays with the practical matter of materials. Interior walls are made from common office rubber bands.



Gerritsen House, Waitaria Bay, New Zealand, 2004
Studio Atkinson. The client sees himself as a cultural ambassador for New Zealand. He asked that the house help establish a modern design identity for his country.



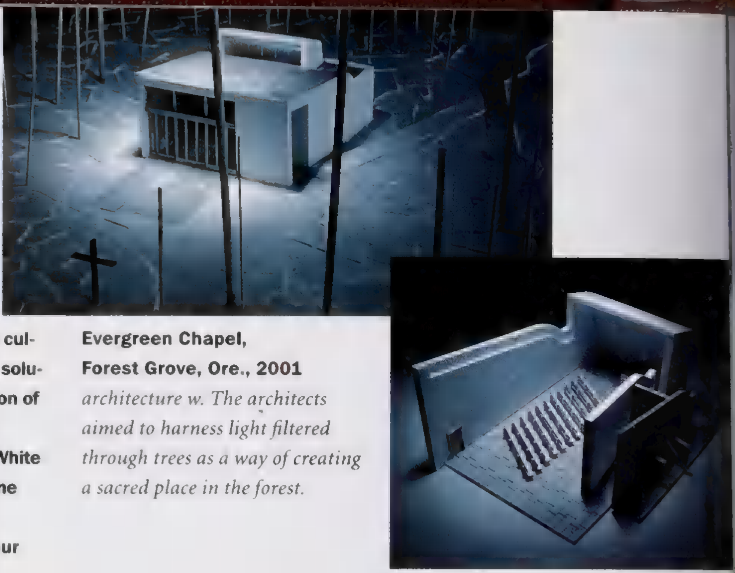
Pacific Palisades Residence, Los Angeles, 2003
paastudio. The architects, a husband and wife team, are building this home and studio for themselves atop 35 concrete piles.

(continued from previous page) cheesy Spanish-Mediterranean style has made a permanent imprint on the commission's minds," said Ivo Venkov. The foundation, with 35 concrete piers, will cost more than the house.

Structural design also takes up a good deal of Stephen Atkinson's time (and that of his structural engineer, Bogidar Yanev), when he is working on the Gerritsen House, a design for a hillside house in New Zealand. Atkinson, who recently moved to New York from the South, won the commission for this house because the client had seen one of his previous designs. The client wanted Atkinson to reinterpret New Zealand's culture through architecture, but Atkinson had little context to work with. His solution was an architectural sculpture that, he said, would give "the suggestion of a vanished culture but be devoid of any purpose, like a ruin."

"All of my friends make fun of my so-called 'pretend clients,' " Brian White of architecture w said. But they don't make fun of his designs, and the same goes for the other architects featured in this portfolio. *Kevin Lerner*

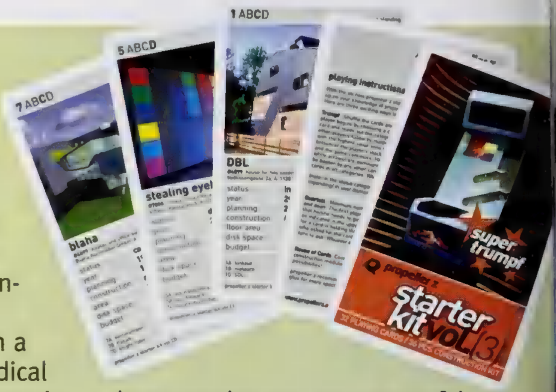
Go to architecturalrecord.com/archrecord2 for more images of the four projects shown here, or to learn how to submit your own.



Evergreen Chapel, Forest Grove, Ore., 2001
architecture w. The architects aimed to harness light filtered through trees as a way of creating a sacred place in the forest.

WORK

Getting the word out



Jordan Williams, a principal of the Atlanta architecture firm Plexus r+d (see page 108) says that his firm has reached a stage in its life cycle where consultants send the firm press releases. Regardless of their utility, most of these press releases wind up in a trash can.

Plexus kept this lesson in mind when its members began discussing their own portfolio.

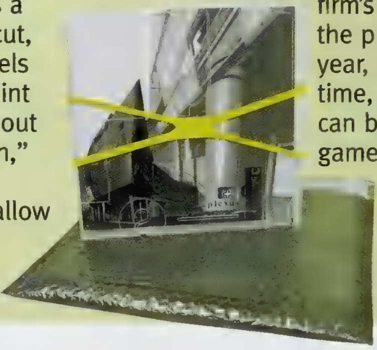
"Without spending too much money, we wanted to design something that people would feel really guilty throwing away," Williams says.

The firm's eventual solution is as much an expression of the team's design philosophy as a keepsake. The laser-cut, frosted Plexiglas panels that form the case "hint at what's inside, without giving away too much," Williams says.

The panels also allow for flexibility in the portfolio, without having to replace the whole package. As the firm's portfolio grows and changes, new printouts (which the firm produces in-house) can be sandwiched in.

The whole kit is bound with a bright yellow, cross-shaped medical rubber band that was intended to tie off I.V. bags. Plexus has sent out "several hundred" of the kits to potential clients and has had enough of the Plexiglas pieces made to manufacture 1,500, at $18–$20 each.

propeller z, an Austrian firm (see page 88), printed a similar number of its own unique portfolio, a deck of playing cards featuring several of the firm's projects. The cards list the project's completion year, budget, construction time, and other facts, which can be used to play a game.



"We introduced the game at the Archilab conference in Orléans, France, where we also set up a green felt-lined playing table," says Kriso Leinfellner, a principal in the firm. "Visitors were actually playing."

propeller z has not won any direct commissions as a result of the cards, but they "are getting more and more job applications from students and graduates, especially from Germany," Leinfellner says.

Plexus hasn't seen any new work as a result of its portfolio, either, but Williams hopes that it will have a more intangible effect: "Maybe a potential client will see our work somewhere and think, 'Hmm, I remember getting something from those guys.' " *Kevin Lerner*

For more stories on emerging architects, visit architecturalrecord.com/archrecord2.

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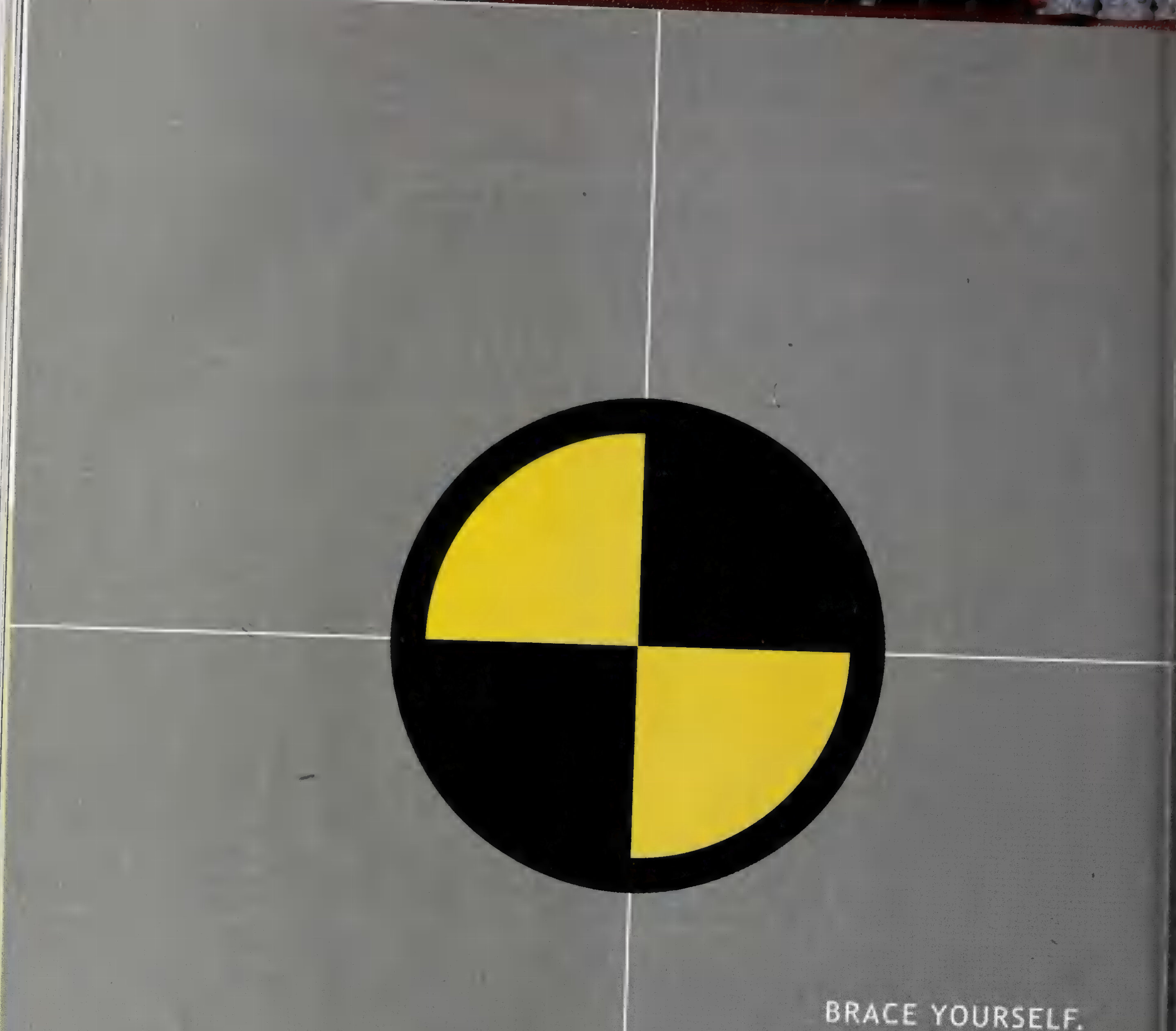
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Picking fights in architecture: First, you have to know what you're rebelling against

Critique

By Robert Campbell, FAIA

ere's a living architect whose ughts I find myself most often in eement with, it's the Spanish tzker Prize winner Rafael Moneo. neo, whose new cathedral in Los geles recently opened to broad claim, writes about "the impor- ce of a shared language that ght go some way to overcoming e wild individualism of today."

Wild individualism is what 've got, with novel gestures, novel apes, and shocks arriving—in th art and architecture—as fast pop hits. The problem is how you est such ideas with meaning. w do you make them seem not be merely arbitrary?

Innovation is fun, but when erybody is innovating, then body is innovating, because ey're all doing the same thing. The only real innovator at that point is the guy who isn't innovating. When the great art historian E.H. Gombrich died a few months ago, his obituary quoted him as saying: "If anybody needs a champion today, it is the artist who shuns rebellious gestures."

Rebellious gestures … When I was a student at Harvard's Graduate School of Design, my class invited Paul Rudolph, then the dean at Yale, up for dinner. As we all sat around on the floor in someone's apartment, he argued that a school of architecture should have a definite philosophy of design and should teach it without compromise. "Otherwise," he said, "you'll have nothing to rebel against."

Rudolph was making an important point. A rebellious gesture is meaningful only against some background of expectation, some background of accepted conventions. It's that background we lack at the moment. Whenever I open an art magazine, the same cliché jumps at me. The artist, I'm always, always told, "challenges our preconceptions." The problem is that my only remaining preconception about art is that my preconceptions are going to be challenged. How can meaningful work be created in such a vacuum?

ntributing editor Robert Campbell the Pulitzer Prize–winning architec- re critic of The Boston Globe.

Inventing Modernism

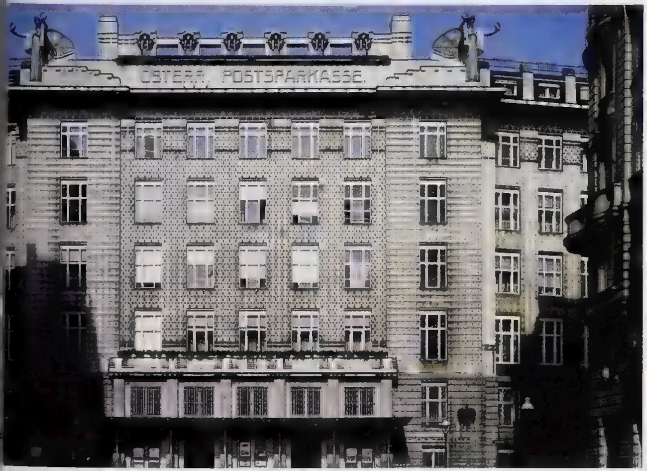
These thoughts are prompted by a recent visit to Vienna and Britain. Vienna, of course, was a world capital of architecture at the turn of the last century, when the great Otto Wagner and his pupils at the Academy of Art—Joseph Olbrich, Adolf Loos, and others—were helping invent what turned out to be Modernism.

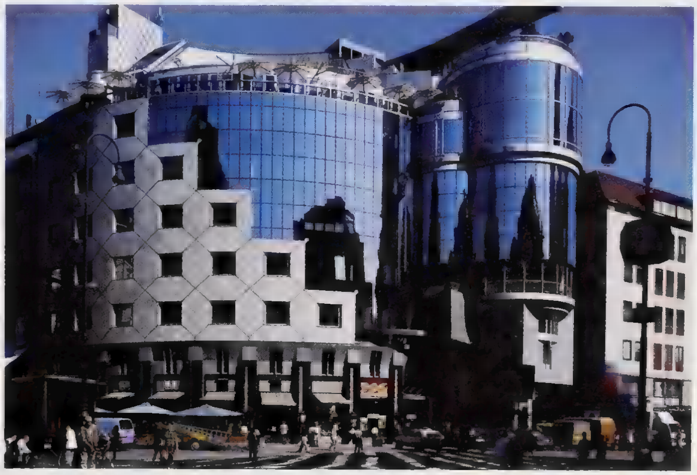
Heavily bombed during World War II, their works are now in terrific shape, thanks to publicly funded conservation. I visited houses by Loos and Josef Hoffmann, and the astonishing Steinhof Church by Wagner. The Secession Gallery, nearly obliterated in the war (its Gustav Klimt murals are in fragments), is fully restored and mounting avant-garde shows.

Also in perfect shape is the Postal Savings Bank by Wagner, a masterpiece of world architecture, still in daily use. So is the great socialist Karl Marx Hof housing by Karl Ehn. So is Loos's incredible American Bar, which, when I was there, was filled to the gills with Dutch architecture students.

A mishmash of flashy ideas

The new stuff, though, isn't always so great. A friend had sent me his Ten Greatest Hits list of Vienna architecture, and one of his items read: "The bar upstairs in the dreadful Hollein building has a fabulous view of the cathedral." Hans Hollein, of course, is the Austrian





agner's Postal Savings Bank (left) is a masterpiece that fits into its urban context, while Hollein's Haas Haus (right) just screams for attention.

Pritzker winner. His building, called Haas Haus, is a pile of mostly shops and restaurants and is indeed dreadful. It's an incomprehensible mishmash of flashy ideas, and it looks like something you'd find on the reject pile in a Christmas-tree-ornament factory.

What they fought against

Compared with this, the work of the turn-of-the-century guys looks even better, and it makes you reflect. Architects then were struggling to break free from what the Viennese call the Imperial Style, the style of the slowly dying Austro-Hungarian Empire, an often pompous and overdecorated late-Victorian architecture (although it has its masterpieces, too, such as the Opera by Gottfried Semper).

The younger architects didn't know it, but they were able to work with great conviction because they knew what they were fighting for and against. Although they often disagreed, they felt themselves to be a generation. Their work was transitional, and that's what made it good. It was its relation to the past and the future that gave it significance. At its best, it retained some of the richness, the urbanity, and the familiar visual language of the older architecture—that background of expectation, that common language—while at the same time moving toward a cleaner and simpler kind of design, intended to be more honestly expressive of the way buildings were actually used and constructed in modern times. The architecture became not a mere novelty but a chapter in a coherent narrative.

INNOVATION IS FUN, BUT WHEN EVERYBODY IS INNOVATING, THEN NOBODY IS INNOVATING, BECAUSE THEY'RE ALL DOING THE SAME THING.

Maybe it's in periods like that, periods of transition, when architecture exhibits a tension between memory and invention, that the richest work is done. The glass-roofed Postal Savings Bank is a classic example. Its white laundered look, like that of the Steinhof, speaks of the health-conscious moderns, after the epidemics of the 19th century. Its exterior, studded with bolts, speaks of its construction as cladding over a frame. Its interiors are filled with detail that speaks of the new industrial age. Yet in its massing, and in such details as its vaulted banking hall or its rusticated first-floor exterior, it maintains contact with an understood language. By contrast, Hollein's "dreadful" building is all invention. Its language lacks both rootedness and significance.

Setting firm limits

I'm probably larding this essay with too many quotes, but here are two more. They're both saying the same thing. From Eric Ericson, the psychoanalyst and biographer: "Play needs firm limits, then free movement within these limits. Without firm limits, there is no play." And Robert Frost, the poet, said that for him, writing free verse would be "like playing tennis without a net." How would he know when he'd made a good poetic shot? Without a net—and a court and a book of rules—you can't play a game. You can only bang out meaningless gestures—what Moneo calls "wild individualism."

After Vienna, I traveled to Britain. Two buildings stand across a canal from one another in Manchester. One is the new Imperial War Museum North, by Daniel Libeskind. The other is the Lowry Center, by Michael Wilford. Libeskind does what artists often do: He invents his own net and book of rules. He starts with the idea that war is destructive of the globe we live on, and he begins his design by cutting up a sphere and arranging its segments—or three of them, anyway—into a sort of architectural still life. Before I saw the building, I'd asked Libeskind whether anyone would perceive the metaphor, and he said that didn't matter. But when I got there, I saw a series of didactic drawings at the entrance, which explained the process of cutting up the sphere and what it was supposed to mean. When you don't share a common language, you have to translate for the public. Still, as arbitrary as it is, there's at least a purely formal logic to Libeskind's design, which is something you can't say for the Lowry Center.

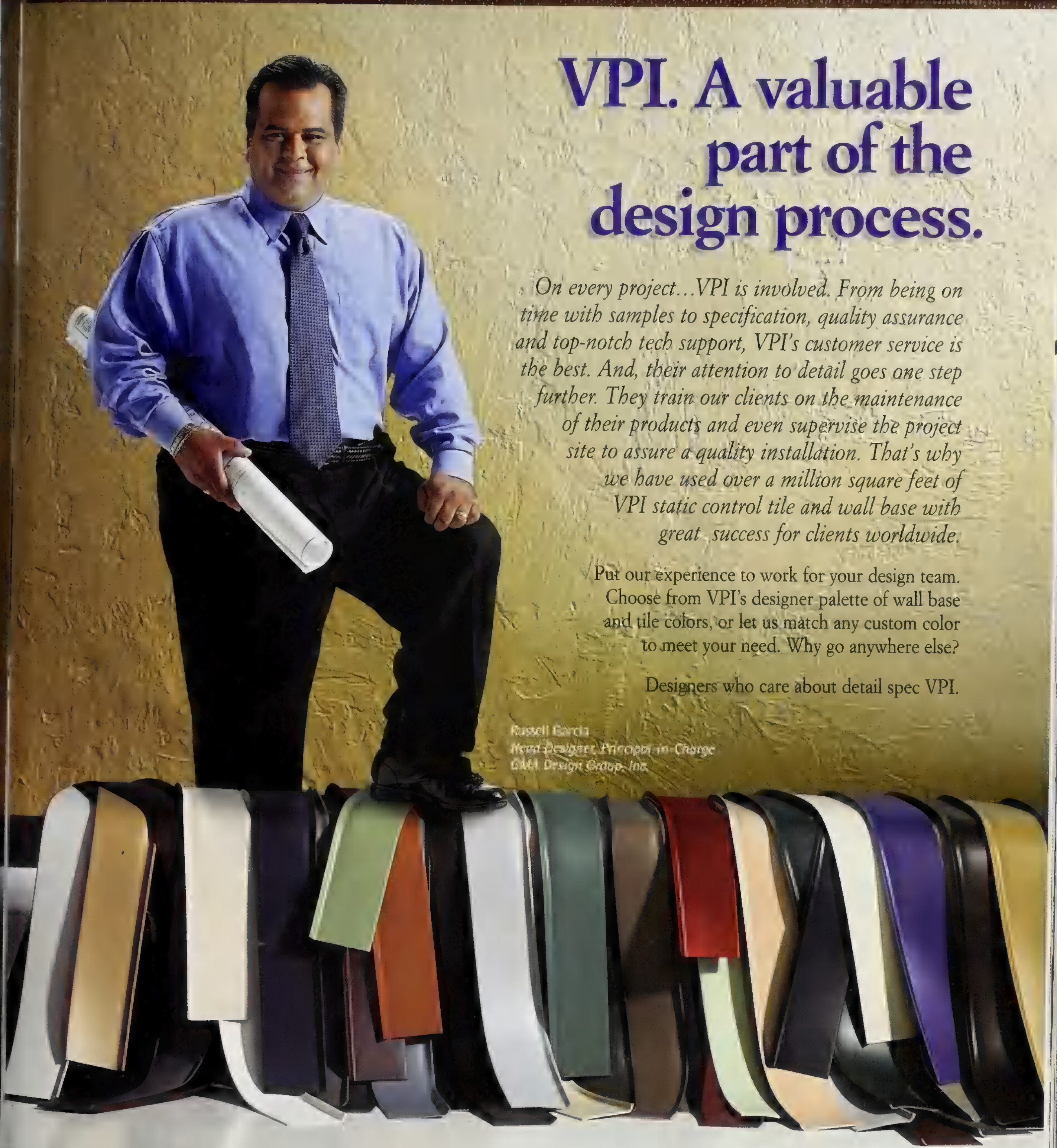
Wagner's rebellion against the often pompous Victorian architecture that came before hi inspired his Postal Savings Bank, which has stood the test of time and is still in daily us

A mad explosion

I've long been a fan of the painter L.S. Lowry, a classically trained artist who painted the industrial landscapes of Manchester in a deliberately primitive style. The Lowry Center is a vast art and pe formance center in which, if you look hard, you can find some Low paintings and a film of the artist talking. As for the building, it makes Hollein's Haas Haus look like a paragon of restraint. The Lowry Center is a truly mad vast explosion of shapes that have no significance. Parts of it look like th court of justice at Chandigarh rendered in shiny metal. Other parts look like missile silos. There is no apparent order to the interior. Nothing relates to any known language of form. Nothing responds to, or shapes, its context. Nor doe anything suggest the presence of Lowry, a 20th-century man who never owned a telephone or a car.

The Lowry Center is the perfec illustration of the problem I'm trying to define. Its architecture communicates nothing but rootless confusio

It's buildings like the Lowry tha turn too many people into architectural reactionaries. They may enjoy visiting it, but they certainly don't want it in the neighborhood. They come to believe that architects live in a dream world, that we have esoteric tastes shared by nobody else. If we want to get clients to spend more money on good architecture, it's helpful if they and we agree on what good architecture is. ■



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Planning How Your Firm Tackles Its Next Job Is the Key to Staying Profitable and Competitive

Practice Matters

By Satish Rao

ing the recent construction
om, almost every project seemed
ent. Fast-tracking and design-
ld ruled, and it looked like there
s no end of the work in sight.
r clients were flush with cash
d willing to pay a premium to
work done quickly.

When things were good, many
chitects didn't feel they had time
work plans for new projects.
ey stopped making the critical
-front assessments of the steps
eded to figure how much it would
st the firm to do a project, to
ake schedules, and to properly
ocate resources. Times have
anged. Firms are competing for
wer jobs, and profit margins have
mmed considerably. Now we
ed to get back into the habit of
ing comprehensive strategic,
ancial, and logistical planning at
e beginning of each job. Why?
ecause such planning ultimately
etermines how well a firm com-
etes, and how profitable it is.

But preproject planning does
uch more than make firms more
mpetitive. It helps to establish
enchmarks and time lines, rein-
rces fiscal discipline, and in
day's litigious environment, aids
ms in anticipating risks and prob-
ms before they occur. Clients,
articularly those who are inexperi-
nced, favor highly organized firms
nd usually welcome the rigor the
ork plan introduces.

Some firms use the planning process to help them to decide whether it is feasible to pursue a particular job. If the firm elects to go after the work and is awarded a contract, the plan can be useful in helping the architect estimate the bottom price for doing a job before contract negotiations begin. The price can be updated if project scope and other specifics change.

What a work plan covers

At a minimum, the work plan comprises a task list, schedule, staffing plan, and a budget, including an estimate of cost and profit.

Once one begins comparing different components of the work plan, it is easy to see their interdependence. No one part of the plan can be fully developed without being cross-checked against the others. For example, the scope of work guides the development of the task list to a great extent. The task list is used to determine the schedule and staffing plan. The budget for design and for producing contract documents and estimating costs and profit will be based on these tasks.

Creating a work plan may sound like a daunting task; however, your office's past project records should be a rich source of task, scheduling, and internal budget information. If you find that your records are incomplete or difficult to adapt for use in making projections, now may be the time to refine your firm's database.

Task list and scheduling

The task list is a detailed description of everything that must be done to accomplish a job, starting with the project's goals and the overall scope of work. When doing this planning, one should be on the alert for tasks that were not fully described in the contract or RFP. A "cartoon set"—thumbnail sketches of the drawing set—can also be helpful in the planning process.

The project schedule can be derived from the task list. Pay special attention to critical review dates set by the client and others that may cause delays or force staff to work overtime. Identify due dates for information and note when your client must make certain critical decisions. Decide when your consultants should get their base drawings and other information. Show dates for in-house reviews, and schedule time for revisions to drawings. It is advisable to include at least a 25 percent contingency for time delays; this can be reduced during later stages of work.

For complex projects, either critical path method (CPM) or program evaluation and review technique (PERT) charts may be used to show task priorities and interdependencies, and to establish task order, but these are difficult to set up. Simple bar schedules may be just as effective if they are enhanced to show links between tasks.

Prepare a staff plan

Once you've created a job schedule, it can be used to develop a staff plan. This is the time to assemble the project team. A check of the schedule will help determine the project's staffing requirements for each stage of the work. Resist the temptation to plan staffing one phase at a time. A look ahead through the life of the entire project may reveal that the firm will face a staff shortage, weeks or months before it happens—soon enough to avoid it.

Be careful to avoid wishful thinking when you're trying to estimate how many staff members will be needed to do the work. Consult your team while determining realistic hours for each task. Common mistakes include underestimating the time that will be absorbed by client reviews, and time spent getting the building permitted and reviewing submittals; forgetting to include the time that principals will have to spend on contractual issues and for quality control. If these are not included in the budget, they will have to be absorbed as overhead, and these costs can be significant.

Time is money

Broadly speaking, there are two ways of estimating hours and fees. The "top down" method employs rules of thumb such as the percentage of construction cost, or numbers of hours per drawing. The method is quick, but it provides only a preliminary estimate of costs because it fails to allow for each project's unique circumstances.

The "bottom up" method provides a more reliable estimate, because it uses the project's task list, staffing plan, and schedule as a basis for the time required to do the work. This is where maintaining a

*atish Rao has been a project manager
r more than 30 years and is currently
ith Torti Gallas and Partners.*

detailed database of your firm's past projects can really pay off. It should be sorted by project type and include size and scope, construction cost, fees, the number of drawings that were required, and hours spent. Consult this database while estimating hours for each new project. You can be almost certain that the number of hours calculated will exceed even the most optimistic estimates you may otherwise have made.

A WELL-ESTABLISHED PROJECT-PLANNING CULTURE HELPS FIRMS ADAPT AND STAY COMPETITIVE IN THESE TOUGH TIMES.

It is also essential that the person estimating job costs know and understand what the firm's "multiplier" is and how to use it. In general, a multiplier is a factor used in cost estimating to account for overhead expenses such as building rent or mortgages, the cost of equipment, consumables, and benefits and taxes. The *Architect's Handbook of Professional Practice*, by Joseph A. Demkin, AIA (John Wiley & Sons, 2001), has more information on multipliers. For our purposes, it is enough to say that underestimating these costs can put a firm out of business.

A good cost plan is one that anticipates and compensates for the unexpected. Don't assume a bottom-up estimate is not required if the fee is already negotiated or if the client has imposed a fee based on a percentage of construction cost. A more comprehensive estimate should always be done in order to double-check whether fees are sufficient, and to develop a strategy for addressing shortfalls if necessary.

The importance of monitoring

Much of the effort of creating a preliminary schedule and budget will be wasted if both are not tracked over the course of the job, not to mention that project records needed for creating work plans in the future will be incomplete. For those reports to be useful, they need to be detailed. Time-keeping codes must be set up to match your intended billing breakdown, and time sheets must be completed accurately.

While simple jobs can be monitored monthly, that's too long for big projects and for firms with large revenues. A practice with a staff of 50, for example, can earn $5 million annually, or more than $200,000 every two weeks. And since firms operate on low margins, a few bad weeks can mean the difference between profit and loss for the whole year. The *Architect's Handbook of Professional Practice* offers good examples of project performance reports. These should be created biweekly so problems can be remedied as they emerge. If adjustments to the contract or billing need to be made, they can be picked up on the next monthly invoice.

A participatory process

Because an experienced staff member can pick up nuances in planning that might not be obvious to a person looking at a spreadsheet full of the last decade's job records, project planning should be a participatory process. Large firms running multiple projects should hold "master planning" meetings so people and resources can be allocated when and where they are most needed.

With many practices downsizing, principals are finding that their staffs need to be more productive than ever. A well-established project-planning culture helps firms adapt and stay profitable in these tough, competitive times. ■

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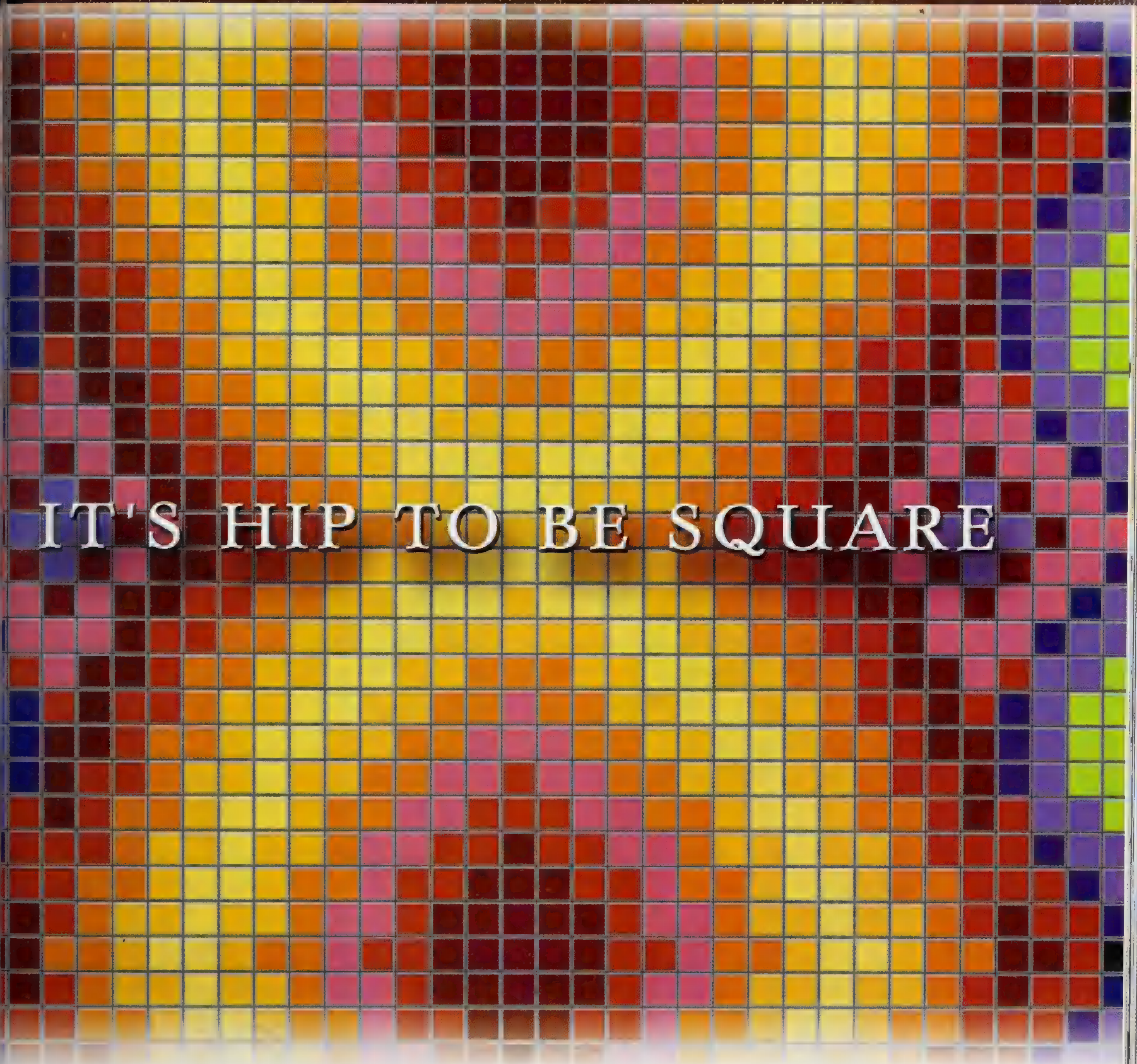

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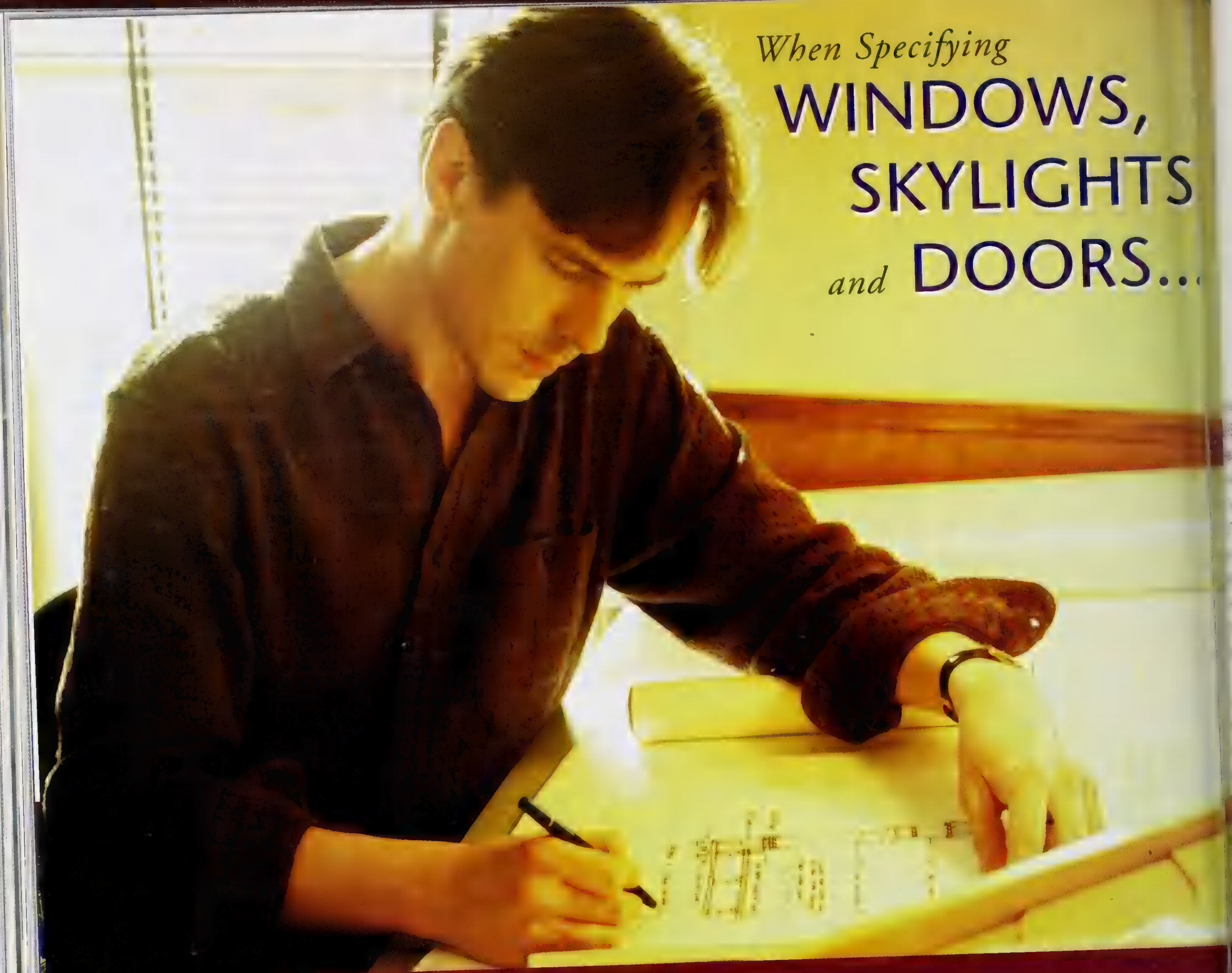

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A new book by a famous author sets off a heated debate

Commentary

By Christopher Alexander

he May 2002 issue of RECORD *ge 93], William Saunders wrote essay on Christopher Alexander's v book,* The Nature of Order, Book e: The Phenomenon of Life, *and 1977 classic,* A Pattern Language: vns, Buildings, Construction. *The owing essay is an edited version Alexander's response. Readers ı access the full version at :hitecturalrecord.com/InTheCause/*

s unusual for a book reviewer to oid talking about the contents the book he is reviewing. Mr. ıunders's review suggests, to my nd, that he felt *The Phenomenon Life* contains material so damag- g to the present way of thinking out architecture that it had to be stroyed, rather than reasoned rough, so as to prevent architects m reading it at all.

If, indeed, that is the case, then is attempt to hide the faults of e present profession of architec- re through bluster is of interest, ecause it suggests how isolated e profession is from recent devel- oments in the sciences. My book esents a proposal, ideas, and ientific evidence which, if taken gether, could have enormous nplications for the practice of rchitecture, and will, once taken eriously, inevitably change the ature of architecture in society.

The Phenomenon of Life escribes an entirely new, scientific criterion of architectural value. It is based on 27 years of carefully recorded observation. The basic proposal made in the book is that degree of life is an objective and observable characteristic of buildings and other artifacts; that it depends on the presence or absence of an identifiable structure, which may be called living structure; and that it is the presence or absence of this that distinguishes valuable buildings from less valuable, good architecture from bad.

And this is real science, not phony social science, not work that only apes the forms of scientific investigation with manner, wording, and presentation. This is real science, in which empirical questions are being investigated, and, in spite of their inherent difficulty, the investigations are beginning to show sharable, empirical results, which might, within a decade or two, begin to have profound effect on our society. And it is work that has massive implications for all the most basic questions of architectural design and planning.

I have written this book to help set architecture on a firm foundation, and because of my conviction that these questions lie, inescapably, at the core of the work architects do every day. It is presented with arguments regarding the scientific difficulty of dealing with this topic. It is presented with hundreds of examples. It is presented with a background mathematical theory, which has been applied to architectural examples from buildings through history.

It is written in simple language, with careful evolution of ideas, from foundations and first principles to concrete results, experimental technique, comparison with other methods used in architecture.

Saunders puts forward no facts to refute my theory, although my book contains hundreds of pages of examples, facts, and observations, and its topic is germane to the interests of every architect. After all, if there is indeed a scientific criterion that might be used to distinguish living structure from nonliving structure, and it is well enough formulated so it could be applied to architecture, this would be momentous for the architectural profession—and for society in general—since it would potentially show the beginnings of a way forward from our present difficulty of building good environments. So why did Saunders not describe what the book really contains?

Did he avoid frank discussion of what the book contains perhaps because an awful truth is visible in *The Phenomenon of Life*, namely that the criteria for living structure, if applied to current stylish architectural productions of our era, will in very many cases arrive at negative evaluations? Such a view, for the first time throwing objective doubt on the high priesthood of architecture, would be consistent with opinions held by many ordinary people who do not like the image-fed high architecture presently supported. The possibility exists, therefore, that if this book were to be taken seriously, either by architects or by society at large, then the bubble of late-20th-century architecture, and its effort to scam the public, might suddenly be on the verge of being pricked.

It must be said fairly, that Saunders does speak for that postmodern, disemboweled majority of the architectural profession, who have given up knowledge that there is truth about anything in architecture, in favor of the notion that there are merely attitudes, opinions, and disguises, and that each person's disguise or point of view is equally valuable. This unhealthy position, inevitable under the impetus of Cartesian thought, is what dug the grave for architecture during the past 50 years. Yet those who espouse it are wrapped in the necessity of this belief because it is necessary to bolster and rescue the absurdity of their position. So any line of thought that actually suggests that feeling and quality are objective must be anathema—because to admit the objectivity of these matters would lay bare the poverty of most architects' conceptions and expose the whole profession and its activities, in the 20th century, as a hollow sham.

The slighting references to "bad science" that appear in Saunders's article only betray a rather undergraduate notion of what science is, and how it is done.

The Phenomenon of Life defines criteria for life in buildings and offers replicable tests for deciding how much living structure exists in different buildings. Of course, the appearance of a real test of value in architecture may give the sweats to the profession. But if architects are worth their salt and fear the concept, they can disprove the argument rather than fail to see the point. This is an invitation to adult debate. ■

:hristopher Alexander received the ıIA medal for research in 1970 and vas elected to the American Academy f Arts and Sciences in 1996.

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Exploring Japan: Construction culture, Edo-era prints, and today's dream house

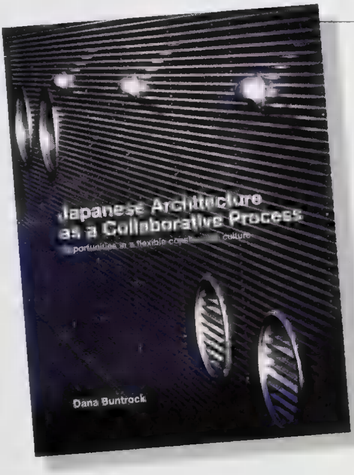
Books

By Naomi R. Pollock, AIA

panese Architecture as a llaborative Process: portunities in a Flexible nstruction Culture, *by na Buntrock. New York: Spon ess, 2002, 224 pages, $53.*

pan produces many of the rld's finest buildings. Innovatively signed and exquisitely crafted, ey embody both Western ideals d Eastern sensibilities. One key to derstanding why they come out well lies in understanding how ey are made. In her book, Dana ntrock unravels this ball of yarn. r basic premise is that construc- n in Japan is a team effort among chitects, engineers, contractors, d subcontractors. Instead of being strained by liability issues and stly change orders, the entire sign and construction team pools resources to make the best ilding possible. Unlike their U.S. unterparts, many Japanese archi- cts do not produce highly detailed nstruction drawings; they rely on ntractor know-how and work out any aspects of the building in their wn on-site offices as the project kes form. This team approach, upled with freedom to revise and odify even well into the construc- on phase (as long as budget and chedule are met), frequently sparks ew ideas and yields high-quality, ell-detailed buildings that respond actual conditions.

aomi R. Pollock, AIA, is RCHITECTURAL RECORD*'s Tokyo-ased correspondent and a ontributor to the book* Japan 2000.


Japanese Architecture as a Collaborative Process
...portunities in a flexible con... culture
Dana Buntrock

While Buntrock's book covers a lot of ground—it has entire chapters devoted to legal issues and architectural education—one of its greatest strengths and most distinctive features is its inclusion of personal anecdotes. Sprinkled throughout the book are Buntrock's war stories and firsthand accounts that illustrate her ideas and illuminate individual designers' personalities and proclivities. One of the best is a description of architect Kazuyo Sejima choosing finish materials for her Gifu Media Workshop. A master at integrating unusual materials, Sejima sent an assistant to the hardware section of a large store near her office. Shortly thereafter, she showed up on-site with a shopping bag containing oriented strand board, vinyl, wood flooring, and Astroturf. Together with her staff and contractors, Sejima reviewed her options and devised a new way to detail the chosen materials.

One way the book could have been enriched was for it to have included more of the client's voice. Historically, Japanese clients have been deferential to their architects. But this is changing. Private clients are becoming increasingly design-savvy, and even public-works projects are occasionally spearheaded by visionary bureaucrats. As a result, sometimes the client plays a role in the collaborative building process.

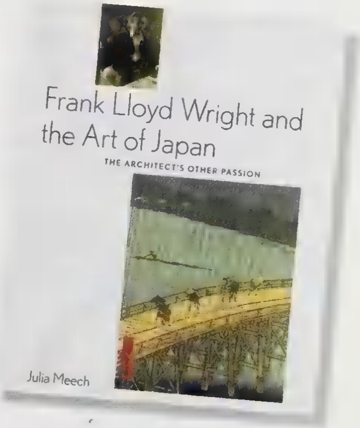
As much a discussion of management techniques as architectural processes, the collaborative working model described in this book cannot be imitated outside Japan. But it can be a source of inspiration to those involved in the construction process.

Frank Lloyd Wright and the Art of Japan: The Architect's Other Passion, *by Julia Meech. New York: Harry N. Abrams and the Japan Society, 2001, 304 pages, $60.*

Frank Lloyd Wright's love affair with the Japanese print is widely known and well documented. But, according to art historian Julia Meech, Wright's infatuation went way beyond an appreciation of beauty and composition. Over the course of decades, he not only amassed a sizable collection—he had 6,000 Japanese color wood-block prints when he died—but helped others become collectors. Wright sold many hundreds of prints to wealthy connoisseurs of Asian art in the Midwest and on the East Coast. At times his dealings in the print world so consumed him that they practically eclipsed his attention to his architectural work. It is the architect's parallel career as a print dealer that is the focus of Meech's book.

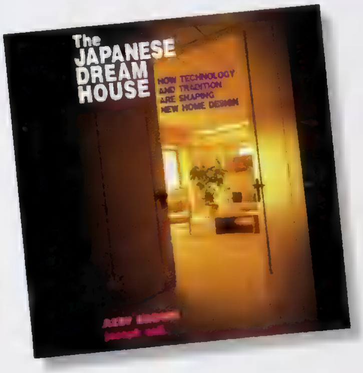
Organized chronologically, the book begins with the early days of Japonisme, when Japanese art began to captivate Western audiences in the second half of the 19th century, and ends with Wright's death and the subsequent demise of his art collection. Although Wright collected Asian art throughout his professional life, his most concentrated period of acquisition took place during the five trips he made to Japan for the Imperial Hotel commission. During his stays in Tokyo he pursued prints during every free moment and then some. Of those heady days, his son John said, "Dad was buying so many works of Oriental art that vendors poured in every day.… It kept him jumping from his stool at the drafting board to examine these antiques as they were presented to him."

One of this book's greatest


Frank Lloyd Wright and the Art of Japan
THE ARCHITECT'S OTHER PASSION
Julia Meech

strengths is that it highlights Wright's role as a persuasive and passionate salesman while including a detail-rich account of the context in which he operated. The book is loaded with anecdotes about clients, dealers, and events that took place on both sides of the Pacific. And these episodes are beautifully illustrated with a mixture of period photographs of Wright's buildings adorned with Asian art; color plates of prints from collections cited; and portraits of clients, dealers, and other players in Wright's art world.

For Wright, prints were both an obsession and a form of currency to pay off debts or reward his apprentices. Over the course of his career, Wright's prints collection fluctuated in size but always remained dear to his heart, often stowed in a stone vault near his drafting table. Because much of his personal collection was sold off after his death, only bits and pieces of it remain intact. However, some of the many prints that he handled went on to become cornerstones of important museum collections in the United States. And now, thanks to Meech's exhaustive research and meticulous piecing together of events, a superb record of Wright's print dealings also survives.



The Japanese Dream House: How Technology and Tradition Are Shaping New Home Design, *by Azby Brown and Joseph Cali. Tokyo: Kodansha, 2001, 132 pages, $95.*

According to Azby Brown, the Japanese dream house is neither an Andoesque concrete box nor a tatami-floored traditional dwelling. Instead, it is the prefabricated, system-built residence that the vast majority of Japanese house owners call home. While the system-built house may not have the visual impact or conceptual strength of an architect-designed home, some versions of it put a premium on comfort and durability.

Brown begins by tracing the historical, social, and technological developments that led to the system-built house's current market domination. After a clear explanation of traditional house types, he discusses the increasing Western influence on the Japanese house. He also provides an easily digestible synopsis of Japanese history that draws attention to such pivotal events as the opening of Japan to foreign trade in 1854, at the end of the Edo period, and the subsequent wave of Westernization.

After World War II, a second influx of Western goods, such as washing machines and refrigerators, was accompanied by a social shift away from the extended to the nuclear family. But, Brown argues, although the appearance of the Japanese house has changed, deeply ingrained traditional use patterns—such as the removal of street shoes at the front door—have been incorporated into today's system-built house.

Brown's portrait of system-built houses includes such ecological contributions as the use of recycled materials and technological innovations, including off-site component manufacturing methods. He talks about how the houses are built and by whom. These homes may not be everyone's dream come true, but their popularity and the reasons behind it warrant attention. ■

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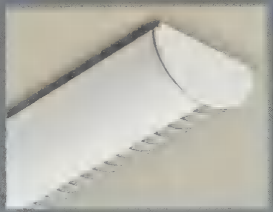

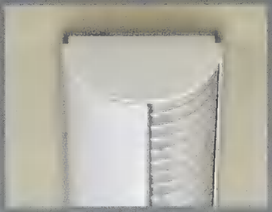

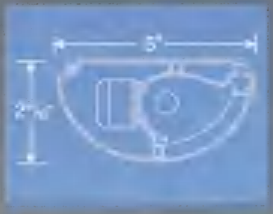

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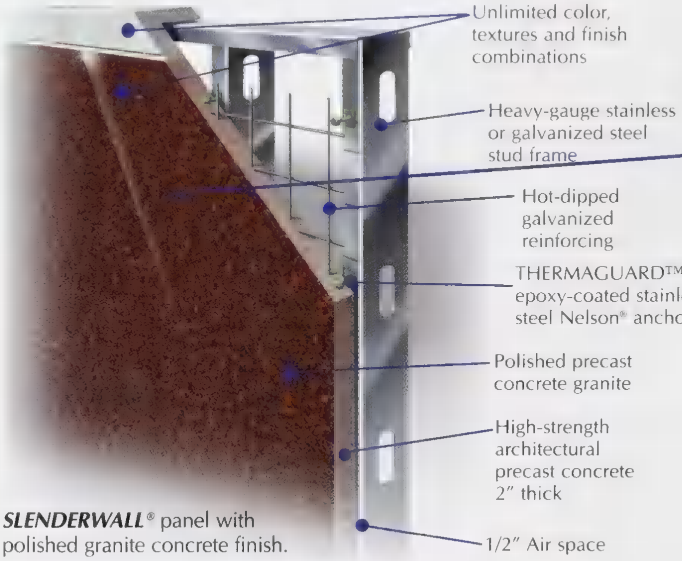
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Arne turns the big one-double-oh, and Danes celebrate his legacy. How does the megashow hold up?

Exhibitions

By Nicholas Adams

e Jacobsen: Absolute dern. *Curated by Kjeld dsen. At the Louisiana Museum, nlebaek, Denmark, through uary 12, 2003; at the chtorhallen, Hamburg, Germany, 25–August 31, 2003.*

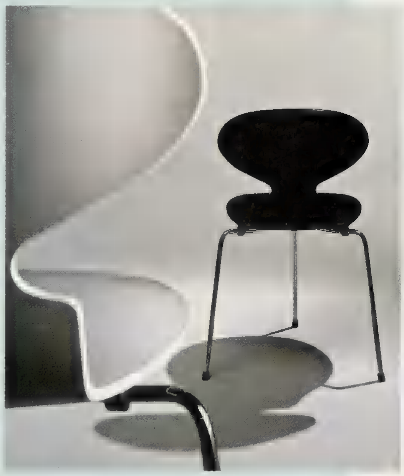
ne Jacobsen has practically ched postage-stamp status here enmark," says Carsten Thau, prosor at the School of Architecture he Royal Danish Academy of Arts and coauthor of the defini- book on Jacobsen. Attendance ires at *Arne Jacobsen: Absolutely dern*, the sprawling centennial ibition on his work and career at Louisiana Museum in Humlebaek, north of Copenhagen, suggest t he is right. (An exhibition at andinavia House, 58 Park Avenue 38th Street, entitled *Arne obsen: A Centenary Exhibition*, ated by Christopher Mount, closed t month.)

The Danes love Jacobsen. d why not? Everyone knows the t, the narrow-waisted little black air that can be found in almost ery public space in the country. rldwide, it has been estimated, re are more Ants than Danes. ose who don't have the Cylinda ries hollowware or the AJ cutlery ve probably given them to meone for a wedding present. uisiana has even permanently decorated its restaurant with Jacobsen furniture and light fixtures and during the run of the exhibition will serve Jacobsen's favorite layer cake and caviar. When I managed a visit, coinciding with the Danish mid-October school holiday, it was not silent black-uniformed architects who controlled the galleries, but nervous grandparents, parents, and their children. Arne Jacobsen, who died in 1971, is on the heritage list along with the Royal Palace in Copenhagen and "Hamlet's Castle" in Elsinore.

The show, curated by Kjeld Kjeldsen, is the most comprehensive ever assembled on Jacobsen. Organized chronologically, it presents all the major buildings with models, photographs, drawings, and original advertising material. There are extensive displays of Jacobsen's travel sketches and watercolors as well as his photography and travel films. The exhibition highlights four projects: the Bellevue area in Klampenborg (1931–38), Munkegård School in Søborg (1948–57), the SAS Royal Hotel in Copenhagen (1955–60), and St. Catherine's College, Oxford, England (1959–64). But it includes more than 250 projects, and the curator has not been stingy, especially with the National Bank Building, the town halls (Aarhus, Rødovre, Søllerød), housing projects (notably Søholm), and Jacobsen's gardens and textile designs. Chairs, light fixtures, tableware, faucets, and coffee services, needless to say, also get prominent attention. Never before has it been possible to appreciate Jacobsen's vast output. And if that were not

cholas Adams teaches architectural story at Vassar College and writes quently on contemporary architec- re in Scandinavia.

The exhibition presents the full range of Jacobsen's work, from the Ant chair (right) to a staircase at Glostrup City Hall (above) and the SAS Royal Hotel (below).



enough, three firms—Dominique Perrault, Gigon and Guyer, and SANAA-Sejima/Nishizawa—have designed installations that comment on Jacobsen's work.

Yet, as Kenneth Frampton writes in the exhibition catalog, Jacobsen has never received proper recognition. The furniture and lamps are well known, of course, but the buildings have fallen between the cracks. The exhibition argues that Jacobsen's strength was his mastery of total design, the kind of strict aestheticism that gave Modernism a bad name in the 1980s. In the four highlighted buildings, combined with anecdotes from his colleagues, the exhibition shows how Jacobsen's disciplined attention to detail brought the elements of design together. His own study photographs taken of his buildings under different lighting conditions show how intensively he worked. Former colleagues, describing his press for perfection, vividly recall his drive. Low salaries, long hours, and tough criticism: "It's ugly"—or, if you were lucky, "It's not that ugly." It was all subsidized by clients (and staff) who learned what it meant to have an architect whose visionary talent was subsumed into creating a *gesamtkunstwerk*, a process that Jacobsen himself found thoroughly exhausting.

THE EXHIBITION ARGUES THAT JACOBSEN'S STRENGTH WAS HIS MASTERY OF TOTAL DESIGN.

Here the exhibition stumbles slightly in its need to satisfy a general audience. Jacobsen's notion of perfection is shown, but the process that produced it—the designs rejected, the paths not taken—are left out. Perhaps those matters are too technical, but the resulting narrative is superficial, with too many shiny hard surfaces. Moreover, the design of the exhibition, with its languorous chronological pace and its occasionally tight-packed corners, is the antithesis of a Jacobsen design. The rooms and the display neither support the images nor establish a visual counterweight. The show presents Jacobsen as the master of the refined detail: a wall gently washed by light at the SAS Royal, the hanging stairs at Rødovre Town Hall, or the shivering metallic waterfall staircase at Aarhus. Perhaps that is enough to encourage visits to Jacobsen's own buildings, the overwhelming majority of which are within half an hour's drive of Louisiana. But it doesn't concentrate the visitor on the essence of Jacobsen.

Three architectural firms designed installations that serve as visual commentaries on Jacobsen's work. These included pieces by Dominique Perrault (above) and Sejima and Nishizawa of SANAA (right).

Hard questions are sidestepped, too. What to do, for instance, about Jacobsen's noted observation that while one may learn from history, one can steal from one's contemporaries. It is impossible to imagine Aarhus Town Hall without Asplund's Law Court extension in Gothenburg, the Hamburg Electrical Office Building without Hentrich and Petschnigg's Phoenix Building in Dusseldorf, Rødovre Town Hall without Saarinen's General Motors Technical Center in Warren, Michigan, the Sports Hall in Landskrona without Mies van der Rohe's Chicago Convention Hall, the SAS Royal without Gordon Bunshaft's Lever House, or the Ant chair without the Eameses. These are much more than inspirational sources. Jacobsen's reliance on his contemporaries exposes the mix-and-match methods by which this collage citizen developed his parti. If his buildings were overlooked in an era of optimistic originality in the 1950s and 1960s and disdained in the Postmodernist 1980s, how interesting that they have come back into favor in an era of Modernist revival. In truth, the exhibition's subtitle, *Absolutely Modern*, misrepresents Jacobsen's modernity as a certainty, a position that was already in doubt in the mid-1930s.

The public can't stay away. But how have architects responded? Of the three firms commissioned to visually comment on Jacobsen, only SANAA–Sejima/Nishizawa penetrated the special ambivalence of Jacobsen's aesthetic control. The firm designed an empty transparent bowl that fills one gallery. It is exquisitely manufactured, clear and bright. Only some long air bubbles slightly deform the surface, creating a watery effect. Does it describe the ambivalent nature of enclosure? We stand outside, looking in and through the bowl, as much prisoners of our fascination as if we were actually inside. It is a proper meditation. On the evidence provided by SANAA, Jacobsen's legacy is still being written.

For Danish architects, matters are different. Discussions on the dullness of the current Danish scene circle back to the influence o Jacobsen. But, "the truth is that corporate Minimalism is pretty boring all over Europe," comments Martin Keiding, an editor at *Arkitektur Dk*. "It comes about through a superficial understanding of people like Jacobsen." At Dissing+Weitling, Jacobsen's successor firm, Teit Weylandt, one of the principals, talks of Jacobsen's extraordinary eye and discipline. For those who lived it, the experience with Jacobsen was not about an aesthetic but about learning a method. If so, it is a method few practice so well. One of the best is Jan Søndergaard, whose headquarters for Bang & Olufsen and Pihl & Søn both crinkle with the memory of Jacobsen's high Modernism, though they lack that special cosiness, which the Danes call *hygge*, that Jacobsen's work now has. Action architecture, blob architecture, Koolhaas, and the Dutch attract Danish students today, says Keiding. "But when they get out into practice, they often return to Jacobsen." ■

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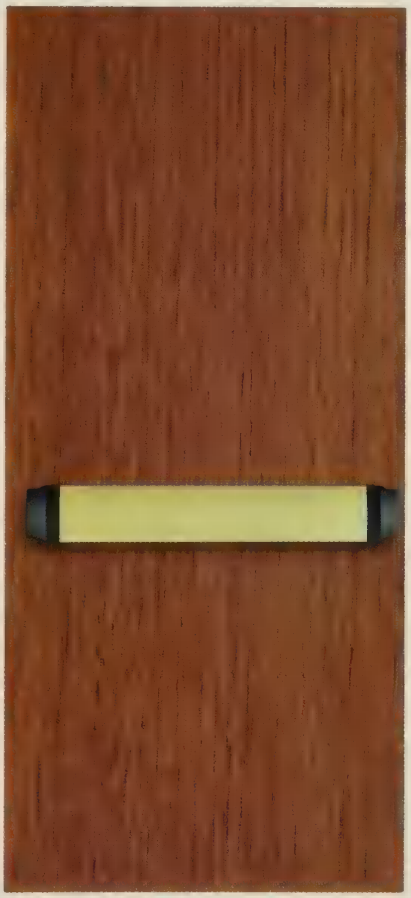

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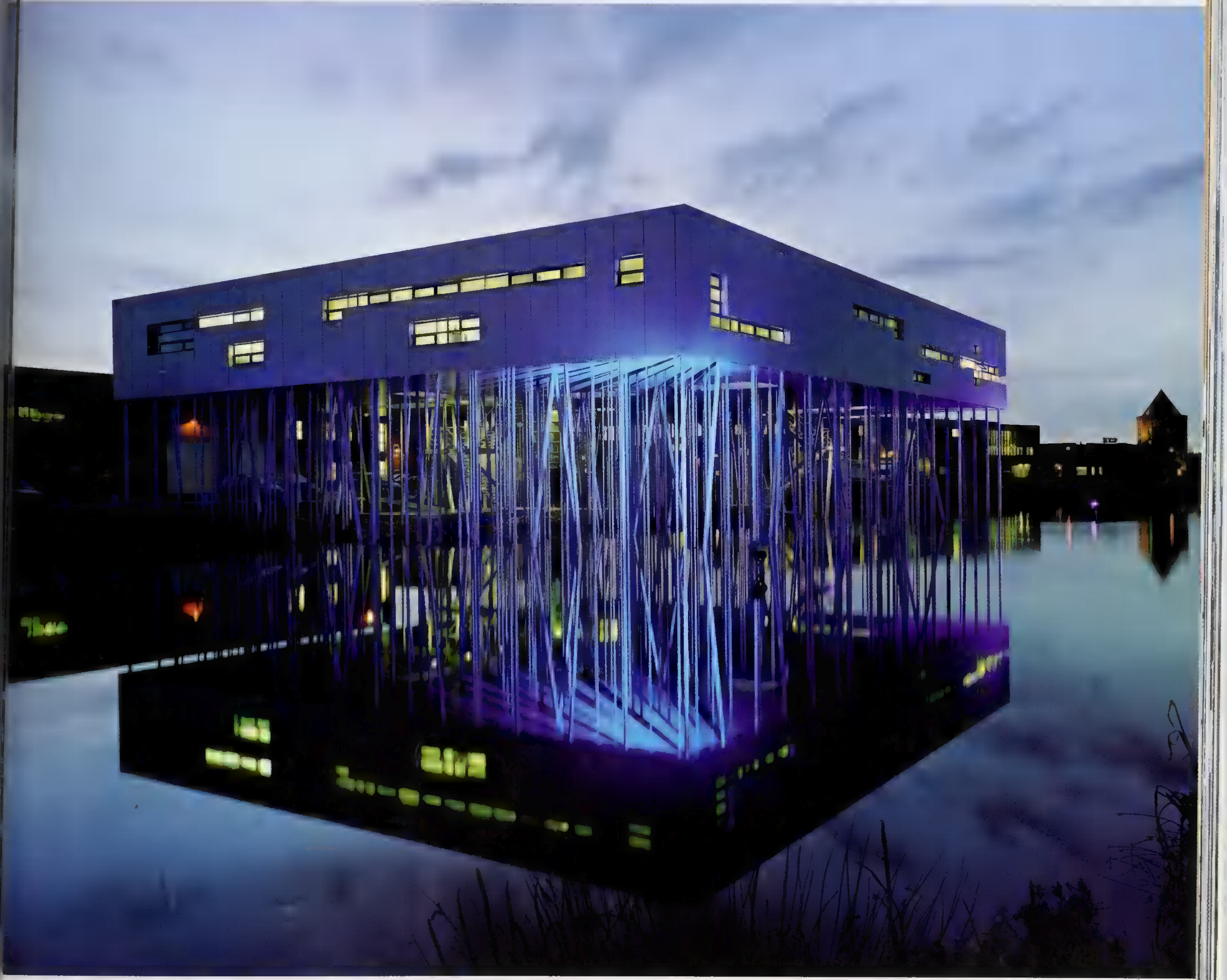
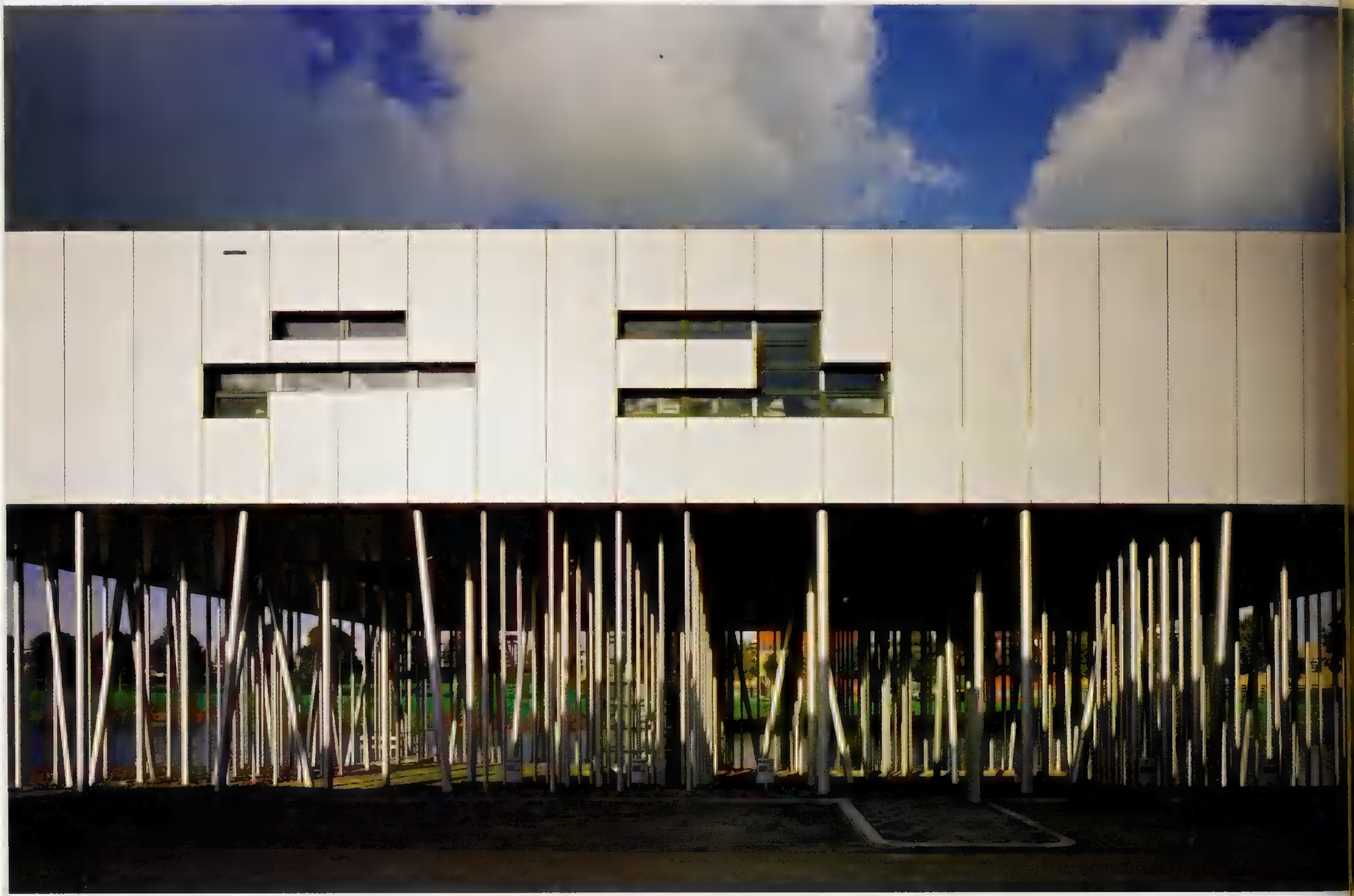


y Christina Rogers

A recyclable, reusable forest of aluminum

is as visually compelling as it is paradoxical. A 1,000-square-meter box alanced on a silver forest of slender aluminum columns. It could not be more astounding argument for the strength and lightness of aluminum s a building material. At least, that is exactly what the architect, Micha e Haas, intended when designing the Aluminum Centre's new home in outen, just outside of Utrecht, the Netherlands.

Peeking over the Dutch landscape, the new building stands as both a sculpture and the headquarters for olland's aluminum industry. All of its components—columns, stairs, window frames, and even the gravel—are ade from aluminum and incorporated into the structure in a startling synthesis of expression and necessity. As uch a showcase as an invitation to explore the latest uses of this lightweight material, the Aluminum Centre ontains materials mostly donated by regional aluminum manufacturers. The construction is an innovation in its wn right, with bracing techniques and structural joinery that leave engineers scratching their heads in wonder.



Aluminum is 100 percent recyclable with no loss of quality. Except for the concrete foundation, the Aluminum Centre could be completely dismantled and parts reused.

Creating a landmark out of such a modest site was no easy feat, but Haas took his cue from the cultivated rectangular plots of thin poplars whose tops merge to create a canopy of foliage over the Dutch countryside. Slowly, this idea evolved into a first model: A matchbox on pushpins, an idea that developed into the underlying structural principle for the building. The completed volume now rests on a shelf composed of 368 columns of different sizes, with a column's diameter corresponding to the length of the span. In developing the design, Haas sought the shortest possible span—the opposite notion of free-columned space.

Yet, unlike a matchbox on pushpins, wind becomes a factor in a building of this size. Some of the columns are bent to provide X-bracelike cross bracing, or, as Haas says, "They're bent as if by the wind, as they are in the forest." At the same time, the 4,000-cubic-meter volume is significantly lighter than it seems. Herein lies the pith of the argument: Either a volume of this size has to be extremely light or the columns themselves have to be amazingly strong. Or both.

"I wanted to present the question of how something can be as light as a soda can, yet can support such a volume," say Haas. "The project was not only about exhibiting the strength of the material but also about stretching the imagination." ■

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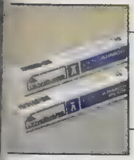

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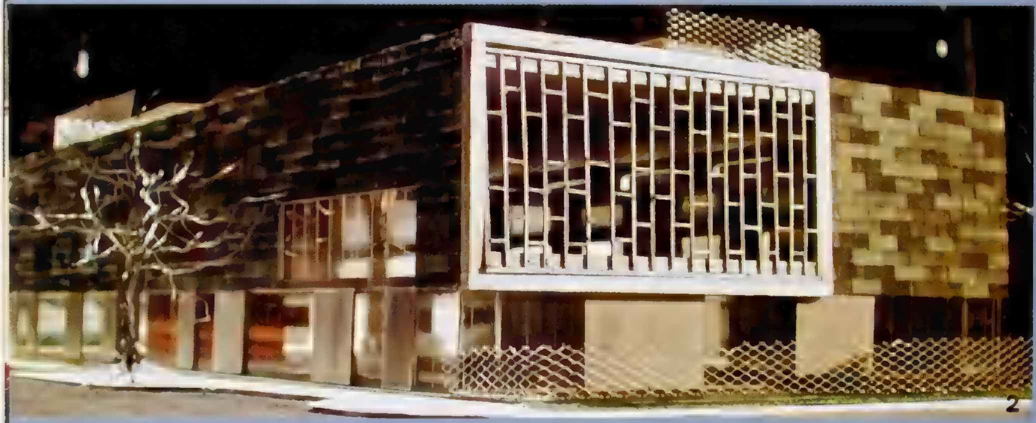

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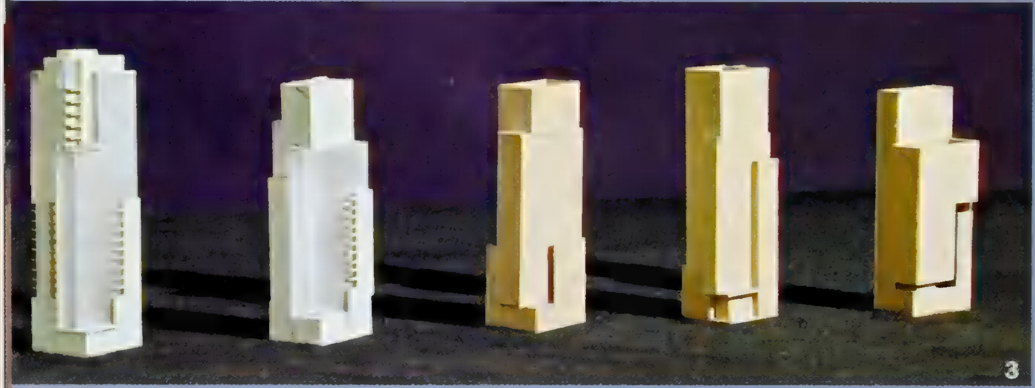


3

WHY WOUL A CLIENT ENTRUST A YOUNG, SMALL, UNTESTED FIRM WITH PROJECT?

4

1. ROY
2. Studio Gang/O'Donnell
3. La Dallman Architects
4. Kuth/Ranieri Architects

Taking a leap of faith

John E. Czarnecki, Assoc. AIA

New York architect Lindy Roy had never had a project, other than a temporary installation, built before this year. That did not deter Vitra, the furniture manufacturer based in Basel, Switzerland, from selecting Roy's firm, ROY, to design the mpany's New York showroom, which opened last month in anhattan's Meatpacking District. In giving the young firm its first comission to be realized, Vitra took a risk with the uncertainty of new, ıtested design ideas and capabilities. Vitra relishes that.

Constantly seeking to define "new" in the culture of design, tra is a proponent of the design vanguard. But why would the company, hich has only a handful of showrooms in the United States, select ROY r its New York home? For Vitra to tap a new talent is not unusual, but r a small, young firm to get a high-profile commission as its first built oject is. Every architect has to get that first project somehow, and Lindy oy was lucky, in some ways, to have attracted the right attention in New ›rk with a compelling portfolio of conceptual designs.

"When I looked at Lindy's dossier, I was completely taken," Rolf ehlbaum, the C.E.O. of Vitra, told RECORD. "It's important to look for a ew voice—a new promise."

Not all clients, though, are as experienced in selecting designers Vitra, and not many young architects have the same access to connecons in the New York design world as Roy has had. Why would a ient—any client—take a leap of faith to go with a young architect for a roject? As RECORD presents its third annual Design Vanguard in this sue, we posed that question to young firms that had been featured in revious Design Vanguard issues or in archrecord2, as well as to one of ach of their clients with work in progress at press time. How did the lient come to select the architect for a given project, and what was the earning curve, for both architect and client, as the job proceeded?

In New York, Roy completed the Vitra showroom after having nly one other realized project—a summer 2001 installation at P.S.1 ontemporary Art Center in Long Island City, New York [RECORD, rchrecord2, August 2001, page 51]. In Chicago, Studio Gang/O'Donnell RECORD, Design Vanguard, December 2001, page 82] has designed its irst community center, with both child and adult day care, for the hinese American Service League. La Dallman Architects of Milwaukee [RECORD, archrecord2, April 2001, page 55] had completed a few smaller projects before being chosen by a local developer—a recent Ukrainian immigrant—to design a 30-story condominium tower in that city. And in San Francisco, a German couple with multiple homes in Europe and the United States hired Kuth/Ranieri Architects [RECORD, Design Vanguard, December 2000, page 106] for a second time to execute a major reconstruction of a residence. These four cases offer a diverse selection of client and project type, but all of the clients share one thing in common: They chose younger firms with developing practices when they could have gone with larger, more experienced companies.

A case for the new

Institutional clients, in particular, are increasingly looking to smaller, younger architecture firms because of the unique, fresh approach and attention that they can bring to a project. Brad Cloepfil, 46—whose Portland, Oregon–based, 15-person firm, Allied Works Architecture, was named last month to design the new home for the Museum of Contemporary Arts and Design in New York City (see story in this issue, page 24)—has noted the trend. "A lot of the next generation of architects are getting opportunities that, say 30 years ago, I'm not sure a small 10-to-15-person firm would have gotten," says Cloepfil, who received his first major East Coast commission with this winning competition and was also recently selected for the Seattle Art Museum expansion.

The Museum of Contemporary Arts and Design (formerly the American Craft Museum) intentionally focused on smaller, younger, or emerging firms in its selection of an architect for the renovation of Edward Durell Stone's Two Columbus Circle for its new home. It did not invite larger firms with more museum experience to apply. Competition finalists included Smith-Miller + Hawkinson Architects, Zaha Hadid, and Toshiko Mori.

Holly Hotchner, the director of the museum, explained: "The museum has always advocated for emerging artists—that's what we do. And since we are also very much in the world of design, it seemed appropriate to look for a person to design our building—which we think will be the greatest object in our collection—who would be in the same spirit as the artists we show. We want this project to be the cornerstone of [Cloepfil's] career."

Cloepfil described his relationship with the museum thus far as "an exciting fit. Institutions that hire emerging architects are really looking at ideas rather than objects. In this and other recent commissions that I've gotten, clients are more interested in a way of thinking and investigating and a way of exploring ideas, rather than just getting a product."

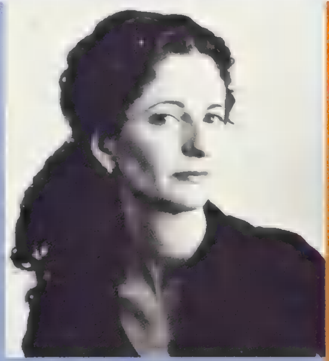
Making a name in New York

For Roy, 39, the opening of the Vitra showroom (renderings, below) was, in a way, her debut as a New York architect on a par with the most innovative thinkers in the profession. A pair of New York innovators and mentors—Elizabeth Diller and Ricardo Scofidio—helped her along the way. Andrew Goetz, Vitra's New York–based director of development, said Vitra had initially considered a wide range of top design talent for the New York showroom, including Greg Lynn, SHoP, Herzog & de Meuron, Rem Koolhaas, Annabelle Selldorf, as well as Diller + Scofidio. Vitra had seriously considered Diller + Scofidio after the husband-and-wife pair had designed the company's showroom installation for Neocon in Chicago, but they were too busy after winning recent competitions. Diller + Scofidio offered a list of architects that they thought would appropriate for the high-profile job, and Roy's name was on the list. Aft reviewing portfolios, Fehlbaum selected Roy.

"In looking at Lindy's portfolio, we definitely thought sl had the makings of somebody special," Goetz said. "It would be ve easy to pick Rem Koolhaas at this time, but we wanted to invest in younger talent that we believed in. It reinforces the concept that ris are important to take and are worth taking."

> **"WE DEFINITELY WANTED TO INVEST IN**
> **YOUNGER TALENT THAT WE BELIEVED IN.**
> *–Andrew Goetz, of Vitr*

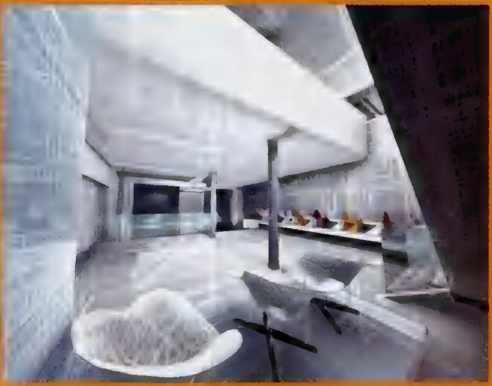
Investing in new talent is something that Vitra has done f decades. Vitra handed Frank Gehry his first European commission, th Vitra Design Museum in Weil am Rhein, Germany, in 1987, and selecte Zaha Hadid for her first built project—the Vitra Fire Station, complete in 1993. "Zaha was, at the time, more of a promise than a proven reality

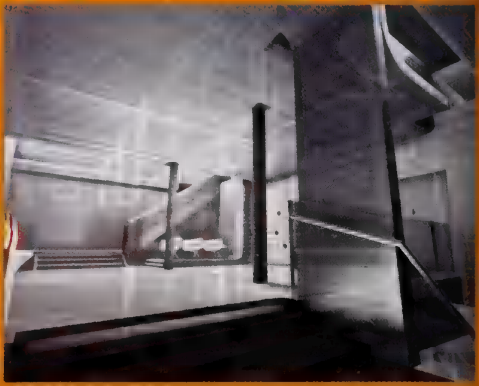


For the Vitra New York showroom (renderings, right), Lindy Roy (above) employed a palette of materials including steel, wood, and industrial rubber that reinterpret the semi-industrial character of the surrounding Meatpacking District. Vitra chairs are placed on raised platforms for easy viewing at eye-level, and wall sections are sheathed with backlit polycarbonate panels.

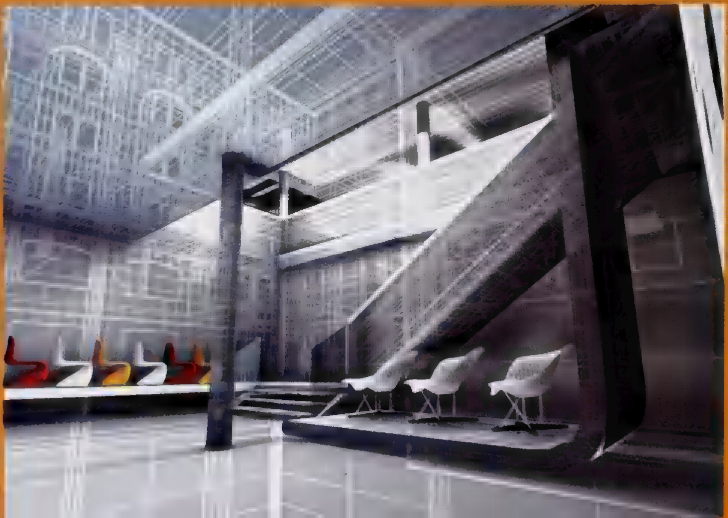
> **"It's very much a part of the Vitra ideal to work with younger architects and be looking toward the future."**
> ***— LINDY ROY***

ARCHITECT: ROY
PROJECT: Vitra showroom, New York City





> **"When I looked at Lindy's dossier, I was completely taken. It's important to look for a new voice—a new promise."**
> ***— ROLF FEHLBAUM, C.E.O. OF VITRA (PICTURED BELOW)***



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Fehlbaum said. "We take a lot of effort to find the right people, and then we work with them to interpret what we are and what we want to be."

Because this was her first built project, designing the showroom was clearly a learn-as-you-go process for both Roy and Vitra. Working with Peter Himmelstein Design and graphic designers 2x4, Roy imaginatively employed a palette of steel, wood, industrial rubber, and polycarbonate panels in the 13,400-square-foot space that includes a gallery, showroom, retail, and offices. "Having a client acknowledge that there were no expectations that I would be more advanced in terms of building experience was incredibly liberating," Roy said. "Once that was on the table, it was a very open relationship, and it never was an issue."

Evolving client = challenging program + more time

Chicago's Studio Gang/O'Donnell has had a bit more experience in having projects built, but it has recently been working with perhaps its most challenging client group—the Chinese American Service League (CASL)—on a project with an extremely complex program, the city's Chinese American Service Center (pictured below). The $5.3 million, 36,000-square-foot facility will accommodate 14 different programs fo the Chinese community, including adult and child day care, a communit hall, youth center, chef-training kitchen, and offices. Led by partne Kathleen O'Donnell, Mark Schendel, and Jeanne Gang, the eight-perso firm was chosen for the CASL project in 1998 and construction just bega last month. What took so long?

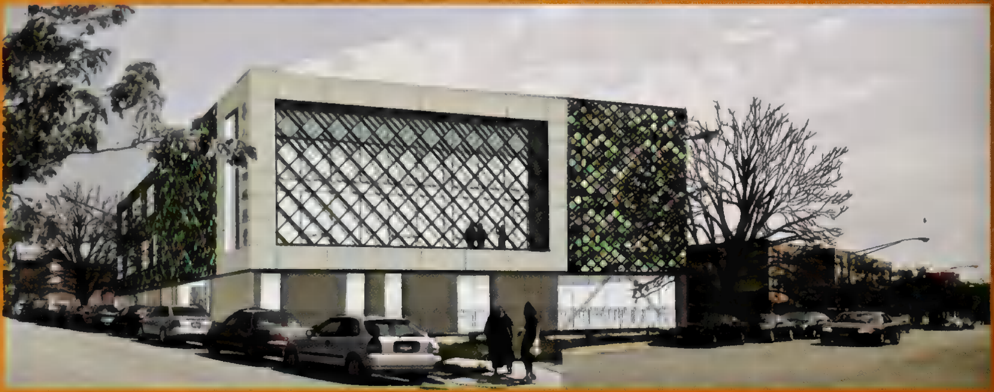
"We started talking about a two-story building with 20,00 square feet and now we'll have a three-story building with 36,000 squar feet," said Bernie Wong, the executive director of CASL, which has serve Chicago's Chinatown community out of a number of disparate location for 25 years. "We had a large growth spurt with our programs at the sam time as they were planning [the building]."

Studio Gang/O'Donnell architects undertook an extensiv study of CASL's programmatic needs. The design went through a numbe of iterations, including a courtyard scheme that had to be abandone when the need for more square footage increased. CASL had considered number of larger and more experienced Chicago firms, and narrowed th list down to five. Studio Gang/O'Donnell was ultimately chosen becaus

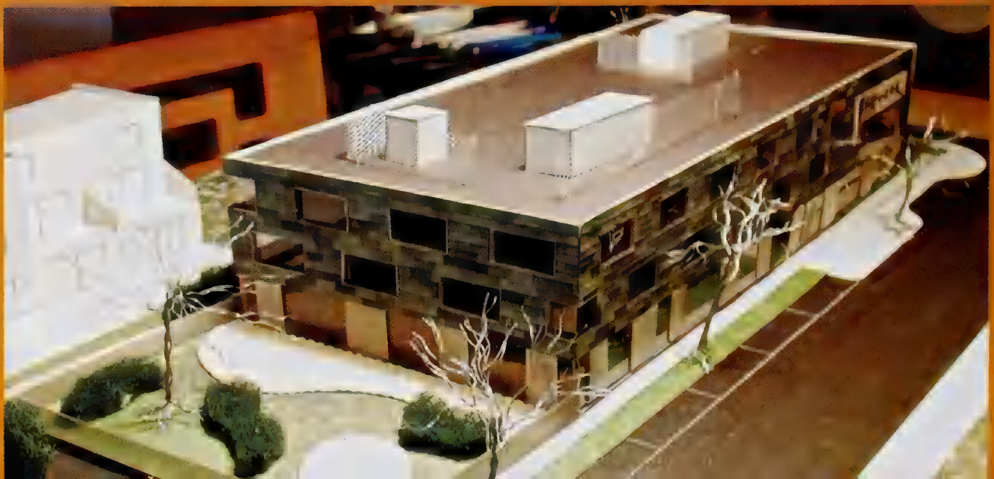
Studio Gang/O'Donnell partners (from left) Kathleen O'Donnell, Mark Schendel, and Jeanne Gang developed a design for the Chinese American Service Center (renderings, right) that includes a large community hall on the second floor (above right). The building will be clad in diamond-shaped metal panels, resembling a dragon's skin of varied colors.

> **"They wanted a firm that would be able to go the full nine yards and not just turn out a repeat solution, because they have a unique program."**
> — *JEANNE GANG*

ARCHITECT: Studio Gang/O'Donnell
PROJECT: Chinese American Service Center, Chicago



> **"Studio Gang/O'Donnell is more creative, slightly out of the ordinary, and we wanted a building that stands out. There are enough buildings that look like each other in Chinatown."**
> — *BERNIE WONG, CHINESE AMERICAN SERVICE LEAGUE EXECUTIVE DIRECTOR*



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Wong said CASL was not convinced that the larger firms would give them the attention and time needed, even if they had experience with community centers or day care. "One of the things that we were concerned about is whether the principal making the presentation would really be managing the project. But with Studio Gang/O'Donnell, we were sure that Jeannie [Gang] and Kathleen [O'Donnell] would be working on it, and that gave me more confidence."

"Energy was important," Gang said. "We won the job after numerous interviews, and we showed that we really wanted the job. They wanted a firm that would be able to go the full nine yards and not just turn out a repeat solution, because this is a unique program."

"Studio Gang/O'Donnell is more creative, slightly out of the ordinary, and we wanted a building that stands out," Wong said. "There are enough buildings that look like each other in Chicago's Chinatown."

Husband-and-wife firm selected for 30-story tower

Further up the Lake Michigan shore, the City of Milwaukee initiated a request for proposals for developer-architect teams in 2000 for a downtown residential development on a site with fantastic views of the lak Peter Park, the director of planning for the City of Milwaukee, said, "Wha we were really asking for was a whole team, a competent team that coul design a building commensurate with the site. We called for a buildin that would be a real signal to the city overall, and to the market, of wha the potential for urban housing in Milwaukee can be."

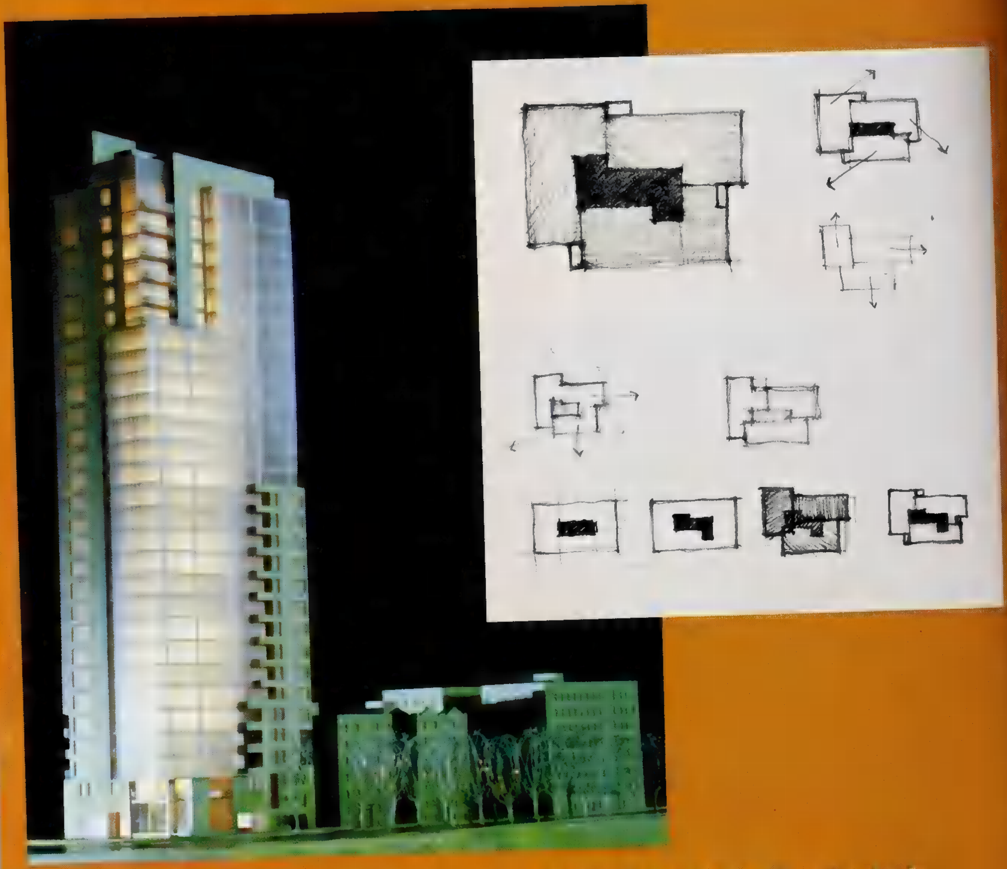
Milwaukee developer Boris Gokhman, who emigrated from th Ukraine in 1990, asked La Dallman Architects—the husband-and-wif practice of Grace La and James Dallman—to team with him for this competition even though they had only recently started their firm with muc smaller projects. Gokhman, who had built a number of residential developments in the city in the past decade, chose La Dallman because "they'r not a mass-production firm. This is kind of a unique project, and I saw them both as creative and very much design-oriented."

La Dallman, in conjunction with TDI Associates and Solomo Cordwell Buenz & Associates, won the competition with Gokhman, an have designed a 30-story, 59-unit condominium tower for the site. Mor than half of the units have sold, and construction may begin this month

James Dallman and Grace La (above) have designed a 59-unit condominium tower in Milwaukee with a plan (sketches, right) that allows for multiple views of Lake Michigan and downtown. Dallman said, "We strategized about creating a particular core shape and floor plan with a kind of spirally shape. That was attractive to Boris, because he realized it was advantageous to sell units, and it created an interesting massing."

> **"A building of this quality requires a certain amount of time, and I think Boris's sense of design time frame is shorter than ours."** — *GRACE LA*

ARCHITECT: La Dallman Architects
PROJECT: Kilbourn Tower, Milwaukee



> **"For me it was a learning process of how to be detail-oriented. Grace and James brought a new level of detail. It's been a good balance."** — *DEVELOPER BORIS GOKHMAN*

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What was the major hurdle for the six-person La Dallman office and Gokhman to overcome on the $45 million project? An understanding of timing in order to design and detail a 30-story tower. "For me it was a learning process of how to be detail-oriented. Grace and James brought a new level of detail," said Gokhman. "It's been a good balance."

"A building of this quality requires a certain amount of time, and I think Boris's sense of design time frame is shorter than ours," La said. "But he has been very receptive, and that was surprising, because we talked with other housing developers that did not bring the same energy."

Like taking Architecture 101

With two projects on a much smaller scale, the husband-and-wife team of Byron Kuth and Elizabeth Ranieri, of San Francisco, have been fortunate to have had design-savvy repeat clients—Adriane Iann and Christian Stolz, a married couple who have several homes abroad, including a castle in their native Germany. The couple hired Kuth/Ranieri Architects in the late 1990s to design a Nob Hill residence (bottom right) after seeing an exhibition of the firm's design work at the San Francisco Museum Modern Art. "I think they wanted to find an American voice," Kuth sai "And Adriane said, 'What I want is something that I never would hav thought of in a million years.'"

Once their new home was built, Iann and Stolz purchased small cottage directly across the street and called on the seven-perso Kuth/Ranieri firm again. This time, the architects will completely gut a existing structure and create a guest house and gallery featuring a ne double-height space and a large skylight puncturing the original roo Construction will be complete in a year. "It has been a little bit like takin Architecture 101," said Iann, "because [Byron and Elizabeth] were ver patient in explaining the theoretical background."

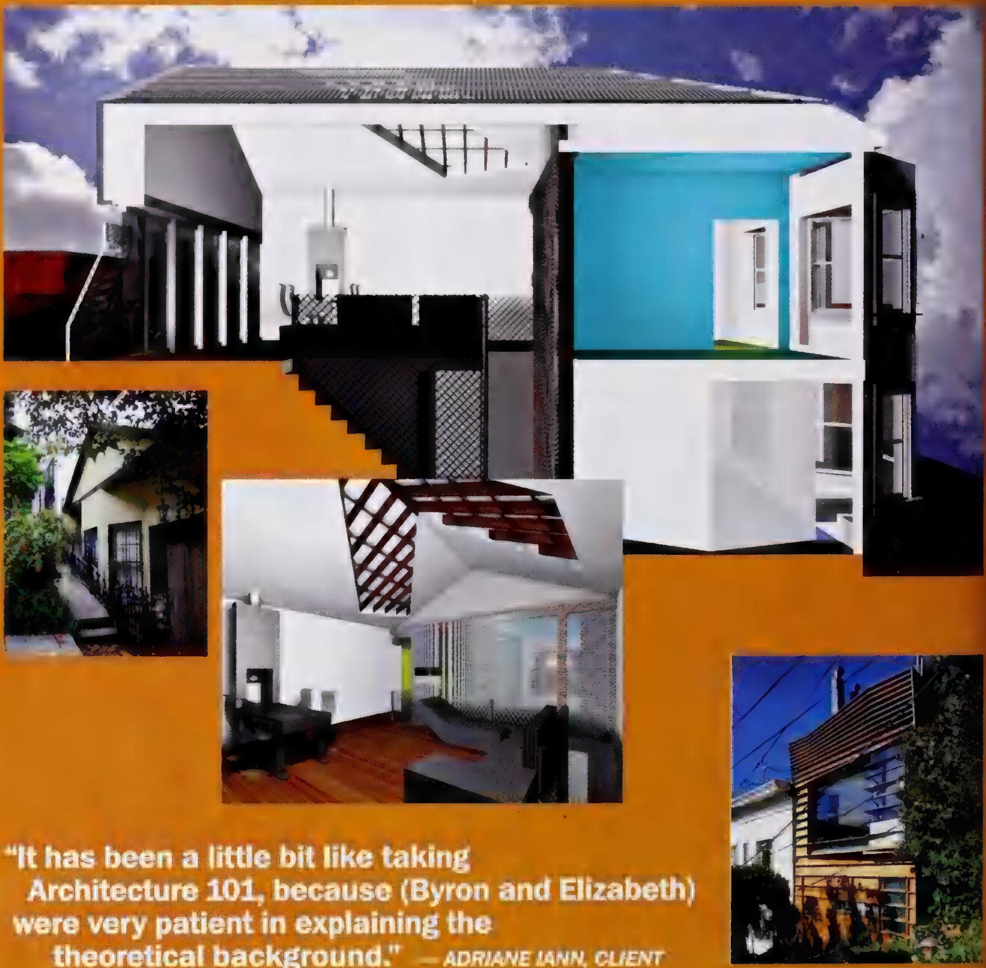
It comes down to patience, effort, and passion

Patience, it seems, is a virtue when a client takes the plunge with a youn firm, as well as passion about the project. "We not only feel that we wer taking a risk," Iann said. "But they were taking a risk as well, because the put all their heart in it. If you put your heart in it, it's more of a risk."

Elizabeth Ranieri and Byron Kuth (above) designed a modern home in San Francisco (bottom right) for Adriane Iann and Christian Stolz and have now been hired by the same couple to do a gut renovation of a cottage (photo, right, and renderings) across the street for a guest house and gallery. A double-height space will be created, and a mesh screen will divide spaces.

> **"I think they wanted to find an American voice. And Adriane said, 'What I want is something that I never would have thought of in a million years.'"**
> — *BYRON KUTH*

ARCHITECT: Kuth/Ranieri Architects
PROJECT: Iann/Stolz Cottage, San Francisco



> **"It has been a little bit like taking Architecture 101, because (Byron and Elizabeth) were very patient in explaining the theoretical background."** — *ADRIANE IANN, CLIENT*

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Ten Degrees of Modernism

WITH NO TRUE PATH DETERMINED FOR THE PROFESSION, WHAT'S A YOUNG ARCHITECT TO DO TODAY?

Joseph Giovannini

Since the early 1980s, architecture has taken some hard hits. No sooner did Postmodernism discredit Modernism than Deconstructivism felled Postmodernism—and in a way that entionally destabilized the foundations of architecture as a discipline. me architects took refuge in the comforts of neo-Modernism and its rivative, Minimalism, a conservative, safe position where architects uld hang out for a while, biding aesthetic time. In 1997, the iggenheim in Bilbao set its unprecedented example. The museum ucture as an epiphenomenal event single-handedly changed the climate which designs are conceived and built, expanding expectations of what building might be and do beyond rote program. Architecture could not ly define an institution but change the entire image of a city and alter a gional economy. Architecture could deliver geopolitical clout.

Then the computer itself threw everything into crisis, especially ien animation programs infused design with curviplanar, biomorphic esigns foreign to conventional construction: In a complete reversal of e Modernist paradigm, skin superceded structure. Furthermore, the omputer challenged the notion of the architect as author in chief—now ere could be two brains at work simultaneously on the same design.

Hardly any theoretical structure, paradigm, or model that might orm a consistent basis of practice for young architects has been left anding. The successive waves of dislocating change opposed rather than inforced one another, preventing a linear, evolutionary growth building n itself. It was Hegelian thesis and antithesis but without the synthesis. olarizing sets of opposites were difficult to reconcile—representational ersus abstract, simple versus complex, mechanical versus electronic.

The architectural landscape in which the emerging generation vorks now resembles Monument Valley, with various disconnected romontories of thought littered across the plains of practice. There is ow no widely shared, coherent vision. Young architects today face the ittersweet position of enjoying great freedom without the benefit of consistent guidance. Released from the straight-and-narrow of any true path, hey have to choose and invent their own. These are tentative times—of eassessment, recuperation, rumination, and rebirth—in which architects are absorbing and digesting waves of change.

Design Vanguard 2002:
1. propeller z
2. Peter Tolkin & Associates
3. Tezuka Architects
4. Rene van Zuuk
5. Plexus r+d
6. JKMM Architects
7. 3SIX0
8. Sahel Al-Hiyari
9. David Adjaye Associates
10. Predock_Frane Architects

But finding unoccupied territory is ever more difficult after seminal figures like Frank Gehry, Thom Mayne, Zaha Hadid, Peter Eisenman, and Coop Himmelb(l)au broke and claimed so much ground in their highly exploratory practices. As New York architect Thomas Lesser has said, "There was nothing left to deconstruct." (Lesser himself went into banality—that is, he transposed notions of suburban culture to urban locations, creating frissons of strange anomie.)

Even the computer, which plunged the field into a crisis of instrumentality and vision, soon constituted newly claimed territory for those who got in on the ground floor. Emerging architects today have been left with little room of their own.

For much of the 20th century, the split between traditionalism

oseph Giovannini is a New York City architect and the architecture critic for New *'ork magazine.*

and Modernism constituted architecture's cold war. With the discrediting of Postmodernism, like the fall of the Iron Curtain, now only one side is left, and variations and outgrowths of Modernism are the only game. Distinctions are finer, between those practices tending to complexity rather than simplicity or those favoring the static over dynamic. The conservative position is no longer Postmodernist or traditional, but a reiteration of reductivist Modernism.

For the third successive year, ARCHITECTURAL RECORD sent out feelers to locate emerging talents whose work might illuminate the coming state of the art. Practicing at a time when there is no clear philosophical imperative, this group of young architects seems to operate in a field of ideological uncertainty, unrestricted, for example, by the logic of industrial production or any philosophical persuasion or professional methodology.

Although there are a few heroic statements among the following projects, a sense of reticence prevails. There are no manifestos; some even verge on antistatement. None really wants to compete with Bilbao as a cultural spectacle, although the understatement of several implicitly engages the issue of monumentalism by positing modesty as a critique.

The aesthetic traction for most of the practices stems from stylistic rather than missionary Modernism; abstraction is an aesthetic norm and lingua franca rather than a system of beliefs intended to make converts. In a graphics studio in Pasadena, California, for example, architect Peter Tolkin is not discovering a new form of beauty in this Mondrianesque interior, with its coloristic planes arranged in contrapuntal compositions. He is applying a known form of Modernism. The aesthetic is a fallback beauty, tantamount to second nature for a contemporary architect.

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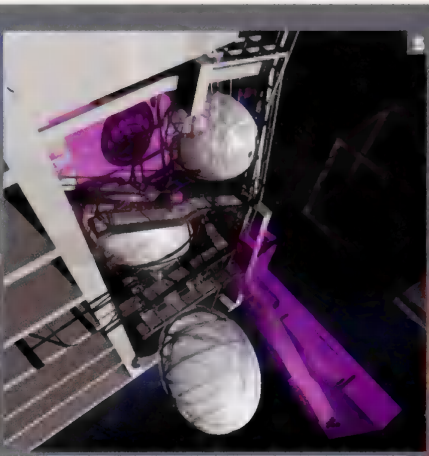
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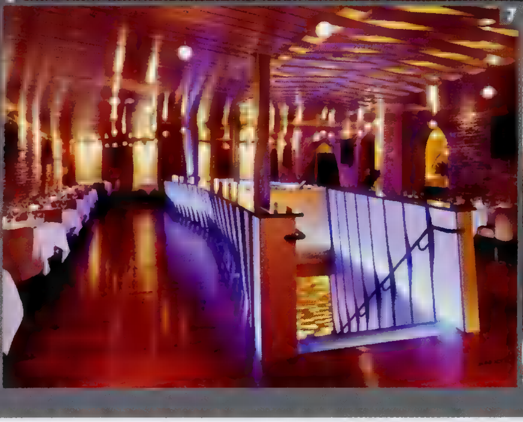
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The aesthetic may be a received one, but it is not exhausted and not necessarily easy. Jordanian architect Sahel Al-Hiyari, trained at Harvard's Graduate School of Design, almost reenacts the discovery of Modernism as an act of abstraction by inventing geometrically intricate, three-dimensional sunscreens that fall in the tradition of both Islamic geometry and Miesian purity. The refinement of concept and execution is dazzling, and the work in general—clean, geometric, refined—makes the point that Modernism is as compatible with Islamic archtitecture, itself based in abstraction, as it is with Japanese architectural traditions.

The Rhode Island firm 3SIX0 develops another classic strain
Modernism in projects that plumb the formal and expressive potenti
of materials. In its 33 restaurant, the bar and stairwell are sided with a sui
of pale blue, backlit fiberglass panels, each slightly different from the next, i
a ratcheted geometric profile generated by computer. The architects ang
the wood ceiling strips out of the plane to break open the ceiling to indire
lighting, hidden in recesses that give the ceiling depth. The luminous env
ronment contrasts with the thick brick walls of the existing building.

None of the architects, whether in Pasadena, Jordan,
Providence, is making a revolutionary statement, but speaking variants of
known idiom. Prominent figures like Gehry claim so much territory that th
better part of originality is to steer clear of their aesthetic patents even if i
means staying within the confines of a known Modernist sensibility
Invention within Modernist convention is better than a derivative signature

All the major directions that erupted over the last generation ech
in the following projects, along with certain traces of early Modernist prece
dents, like Surrealism, that never consummated themselves in architecture
A kind of hybrid vigor results in the work of architects who cross-pollinat
different strains on their way to their own inventions. The disparate influ
ences are not homogenized into safely contained packets.

Most, though not all, of the architects favor open rather than closed forms, and no structure is more open than the Beijing Zhongguanchun Life Science complex, by Plexis r+d. The sprawling, self-mutating project has an architectonic porosity that allows the buildings to interact with the landscape and public spaces in a continuum that fuzzes strict inside-outside boundaries. The project recalls the extreme complexity explored by such architects as Thom Mayne, who emphasizes the separation, articulation, and segmentation of the parts. In the Beijing project, the differentiation of the parts allows the free expression of the specific and unique: The general rule does not override the exception. This is an architecture of diversity, and an appropriate model for a country that does not want to be swallowed into the voracious maw of globalization.

Plexus r+d designs by the juxtaposition of differentiated parts.

dock_Frane Architects of Los Angeles designs by a related Modernist nique that comes out of collage layering. In its Rinzai Zen Buddhist reat, an 8,000-square-foot complex whose hovering planes make it look ger than it is, the architects separate and layer planes and volumes, ating breathing environmental reveals that draw light and wind into l through the building. This is a building of great visual power, even ugh it avoids any sense of weight: Metallic surfaces etherealize masses.

The typological logic and stylistic tropes of Postmodernism have ished from the screen, but Postmodernism's salubrious emphasis on ntext, as opposed to Modernism's inclination to the tabula rasa, remains ong in several projects. The Finnish firm JKMM Architects created one of more heroic projects, the Center for Architecture, Building Technology d Design (ARMI), which it positions at the water gateway to Helsinki h great poise. Wrapped in a taut cutout plane, the building hovers above ground and water. On its outdoor plaza and within the building, the hitects work with a double geometry, creating a dynamic sequence of ms and spaces whose parallactic shifts engage the visitor's eye up rough the building. Fragments of the plan erupt from the roof, playing ainst the large geometric gesture. The building is a strong visual cornerone that starts the city. It holds its place in a harbor where the sea, sky, and ssels dwarf most structures.

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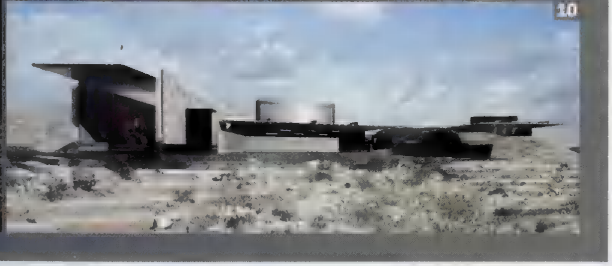

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JKMM's position in the Modernist spectrum is a pole opposite hat of several architects with a Minimalist sensibility and a strong impulse oward the sanctity of the right angle. The power of London architect David djaye's buildings is in the single-mindedness of volumes and planes completely stripped of any detail—he even organizes some of his smaller uildings so that windows and doors disappear from facades, the windows islocated to the roof and the doors to the side. The facades of these Donald udd–like objects become mute planes that give the buildings an aura of ystery. Interiors are pristine white boxes that become receptacles of light.

Japanese architects Takaharu and Yui Tezuka design with the ame reductive purity, but with an emphasis on the environment. The wo architects create not just shells, but interactive environments that sers can substantially change: Roofs and walls slide back to open the buildings. Occupants are not simply consumers passively using space, but operators invited to significantly reshape it. As in traditional Japanese buildings with shoji screens, the environments are participatory, and the spaces transformative.

The architects sometimes push the simplicity to such an extreme that they enter a strange territory beyond elegance. In one suburban house, they fix ladders up to escape hatches in the ceiling so occupants can climb onto the roof, which they use as a beach or yard; the architects leave the roof looking like a roof, without transforming it into a terrace or deck. In another house, the architects push symmetries so resolutely that they achieve an ineffable oddness. There is in the Japanese character a gene for obsessiveness and a love of the strange: The architects sometimes edge their buildings into a delightful Duchampian absurdity bordering on the surreal.

THE COMMON CORE IS A DIVERSE MODERNISM NO LONGER TETHERED TO A SINGLE INTERPRETATION OR SOLAR FIGURE.

Dutch architect René van Zuuk enlists the computer to make his buildings strange. He usually determines the appropriate structural system and then sics the computer on it, deforming it. The designs push the limits of deformation to a point just short of unbuildability. He eschews any form of Modernist beauty in favor of the deviant. The computer leaves its fingerprints, but not as conspicuously as projects of recent years. The computer is being absorbed as a tool rather than featured as a design messiah.

In Pasadena, Peter Tolkin also cultivates deformation—in a church built with a Lamella structure. Using wood framing similar to the diamond-shaped members of the original shell, the architect creates small, self-supporting, alcovelike chapels with distorted geometries that contrast with the idealized regularity of the Quonset-shaped building (formerly a theater). As the architect states, he makes the static ecstatic. The computer may have helped, but Tolkin is not making a high-tech statement about electronic intelligence. The aesthetic, in fact, is rather low-tech. In an artist's studio built behind a Craftsman bungalow and garage, the architect erected a small structure out of wood framing and plywood infill, in what seems an effort at undesign or antistyle. The chief virtue is the voluminous interior and a lack of design pretension that charge the structure with a sense of the raw and immediate.

What emerges in the work of several architects is attitude—a quirky, slightly devilish disposition that provokes feelings beyond the material facts of the building. Attitude in the form of a Pop sensibility, descended from Archigram, is very much in evidence in Meteorit, an exhibition complex in Essen Germany designed by the Viennese firm propeller z. A large and glorious gizmo, the building celebrates the machine paradigm with ducts, trusses, and a long tubular fuselage housing administrative offices. The architects painted it all garish blue, with flashes of lipstick red. They land a tart blue machine in a green garden.

If the 10 architects here represent a cross section of the field at this point in time, the center no longer holds. Without a magnetic core, these young practices have been released to their own orbits. There may be tangential relationships, but there are few dominating centrisms around which to gravitate. The common substratum may be Modernism, but a very diverse Modernism no longer tethered to a single interpretation or solar figure. Architecture no longer enjoys a grand narrative but many smaller ones.

As architects absorb the shock waves of the last generation, they are broadening the range of architectural practice with expanding and perhaps irreversible diversity. They aren't likely to fit back into any box. ■

propeller z in Vienna, merges architecture with industrial, graphic, and set design

By Sarah Amelar

Architect: propeller z
Location: Vienna, Austria
Year founded: 1995
Design staff: 8
Principals: Kriso Leinfellner, Philipp Tschofen, kabru, Carmen Wiederin, Korkut Akkalay
Education: Leinfellner: Gerrit Rietveld Academie, Amsterdam, industrial design, 1995–96; Academy of Applied Arts, Vienna, industrial design diploma, 1996; Graz University of Technology, Austria, architecture, 1988–89; Tschofen: University of Michigan, architecture, 1992; Vienna University of Technology, architecture diploma, 1998; Vienna University of Economics and Business Administration, 1986–88; kabru: Kyoto City University of Art, Japan, design, 1996–98; Royal College of Art, London, 1995; Vienna University of Technology, architecture diploma, 2002; University of Linz, Austria, and Graz University of Technology, physics, 1986–88; Wiederin: Academy of Applied Arts, Vienna, architecture and interior design diploma, 1990; Akkalay: Academy of Fine Arts, Istanbul, architecture, diploma, 1990
Work history: None of the propeller z partners had significant professional design experience before forming the firm.
Key completed projects: Basis Wien, Vienna, 1997; SGL House, Vienna, 2002; Hutchison 3 offices at Gasometer C, Vienna, 2002; DBL House, Vienna, 2002; GIL fashion area 1 and 2, Vienna, 2000; Meteorit, Essen, Germany, 1998
Key current projects: Datacenter office, Vienna, 2003; Haus M, Vienna, 2003; Knight Rider funicular to ancient castle, Riegersburg, Austria (on hold); furniture designs for Wittmann, 2003

The Vienna-based firm of propeller z derives its curious name from *command-z*, the computer keystrokes that undo what has just been done. But for this eight-person practice, the concept of backtracking or unraveling represents a remarkably constructive attitude, rather than a self-defeating or nihilistic one.

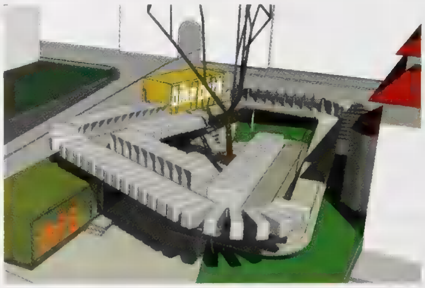
"When we started out," says Philipp Tschofen, a propeller z principal, "we were still learning how to work with computers and used command-z a lot." Tschofen and his coworkers nicknamed the command key for its resemblance to a propeller, and eventually "came to see 'propeller-z' as a positive symbol for our approach to design," he explains. "We begin each new project by going with the flow, but then we always intentionally stop the process, review what we've done, and start all over again." The goal is to find an optimal solution and systematically distill its essence.

Since its founding in 1994, the firm has grown from two to five partners and has applied its *z* philosophy to projects ranging from a small museum and designs for temporary exhibitions to single-family houses, retail shops, professional offices, furniture, and an array of well-received, but unrealized, competition schemes.

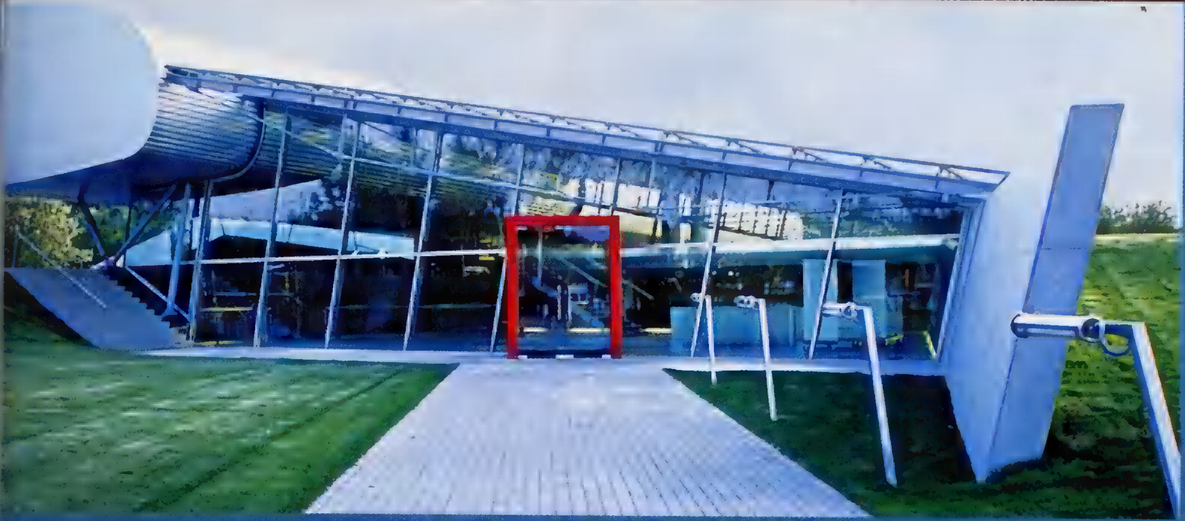
Collectively, the partners—Korkut Akkalay, kabru, Kriso Leinfellner, Carmen Wiederin, and Tschofen—received education in Turkey, England, the U.S., and Japan, as well as Austria. And, as the interdisciplinary character of their work reveals, the group's training extends beyond architecture into the fields of fine arts, and graphic, furniture, exhibition, set, and industrial design. In Meteorit (1998), for example—an exhibition complex in Essen, Germany—the firm conceived not only the curvy, aluminum, hull-like building that hovers above underground exhibition spaces, but the furnishings and interior fittings, as well.

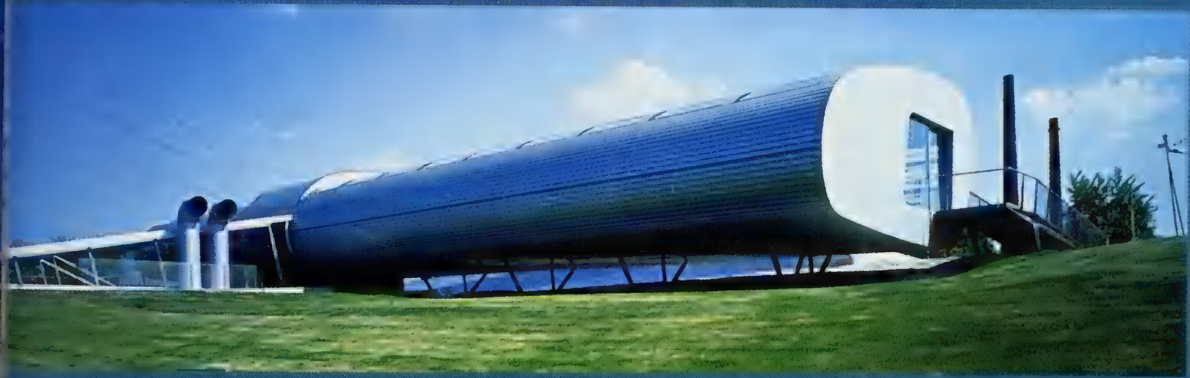
Explorations of altered perception, including varied ways of seeing, occur frequently in the firm's work. At Meteorit, a sequence of media installations heightens the experience of descending a network of ramps, bridges, and stairs into the complex's lower reaches. For GIL fashion area 1 (2000), a Vienna shop, transparency and voyeurism play key roles. In the *i:spy* installation (2000), surveillance cameras, monitors, and peepholes are the main ingredients. *Future Music Blender* (2000) involved propeller z's collaboration with the M.I.T. Media Lab on an environment for exploring sound. And in the *Stealing Eyeballs* exhibition (2000), the firm probed interactions between real and electronically mediated space.

A competition entry for a bicycle storage facility in Krems, Austria.



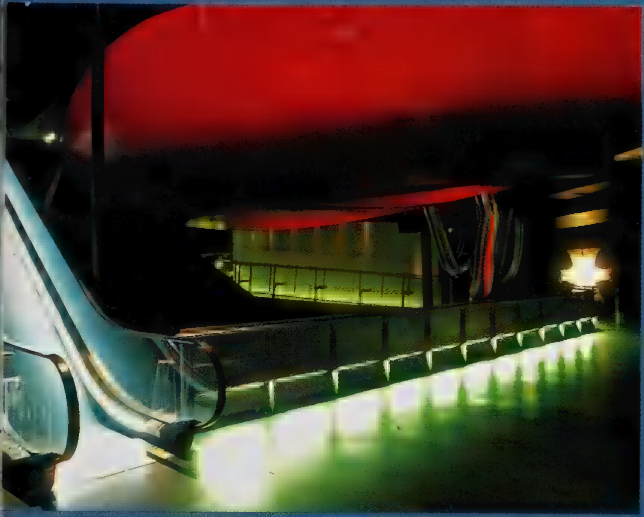
Very much in the real world, however, propeller z is wary of projects that look exciting in computer renderings and models but deteriorate into dull buildings when ultimately realized. "We strongly believe that design must prove itself in real-life, constructed forms," Tschofen emphasizes. He and his partners are particularly intrigued by prefab objects. They aspire to create kits of parts that clients can clip together without any tools, screws, or special skills—just with a very clear set of assembly instructions. The firm has already achieved this end with a stairway in a single-family dwelling, but the ultimate goal is to produce a do-it-yourself clip-together kit for a whole house. ■

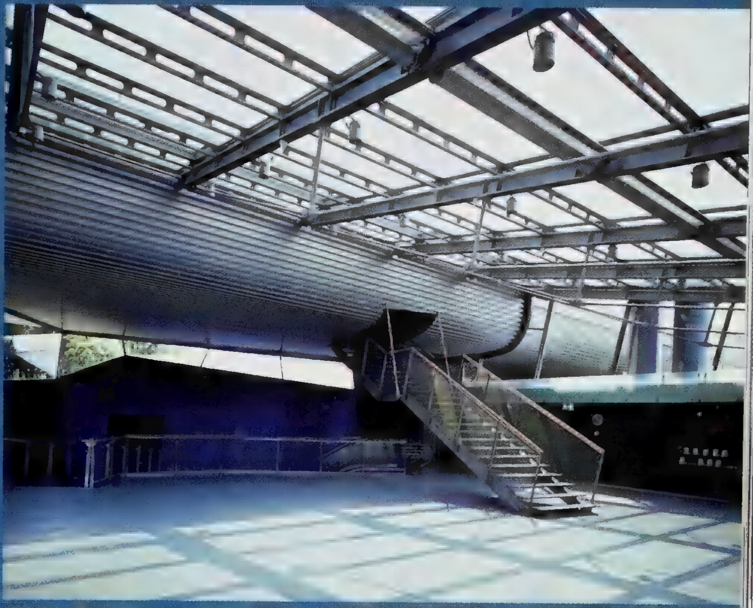


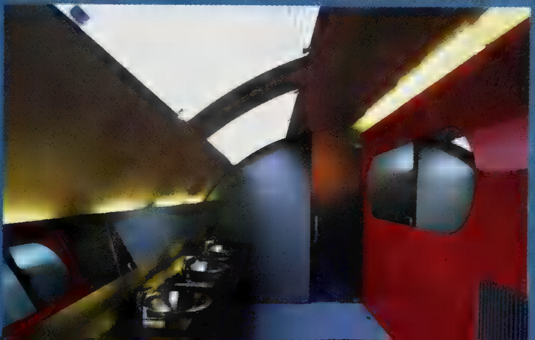


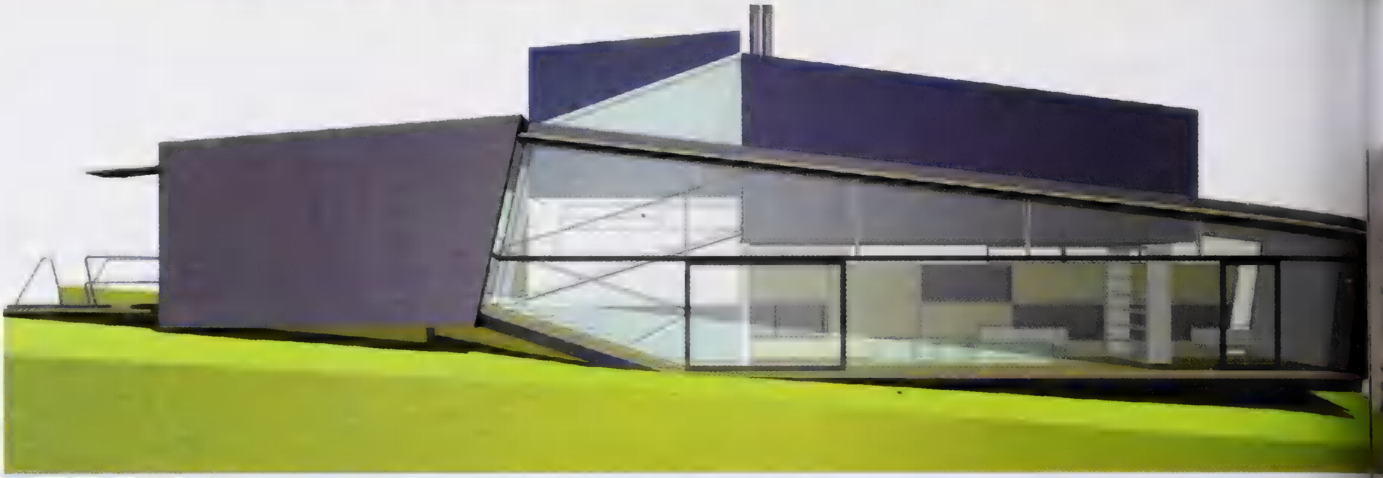
leteorit,
ssen, Germany

This exhibition-and-entertainment complex deftly integrates three distinct components: (1) an apparently hovering, curved aluminum hull that houses a café, rest rooms, and staff facilities; (2) subterranean exhibition spaces, approached by a network of stairs and ramps; and (3) a sloped glass roof, extending from hull to ground, that covers the entrance hall, coat check, and shops.



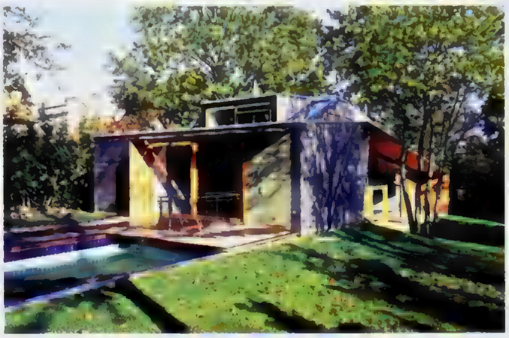


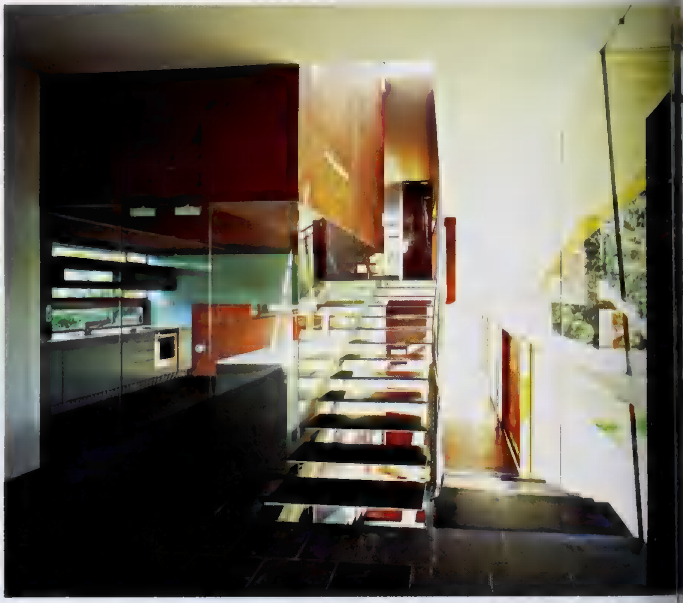




SGL Residence, Vienna, Austria

Formally, this single-family house explores ideas about transparency and visually light construction with thin, folded planes and elegantly revealed sectional relationships. Varying qualities of luminosity play against vertical surfaces of smooth wood or glass and horizontal planes of stone or wood.



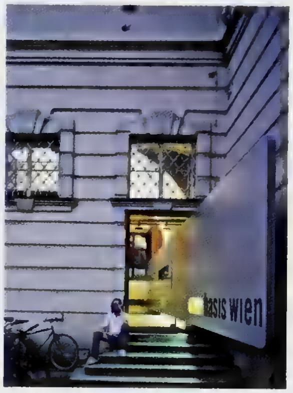


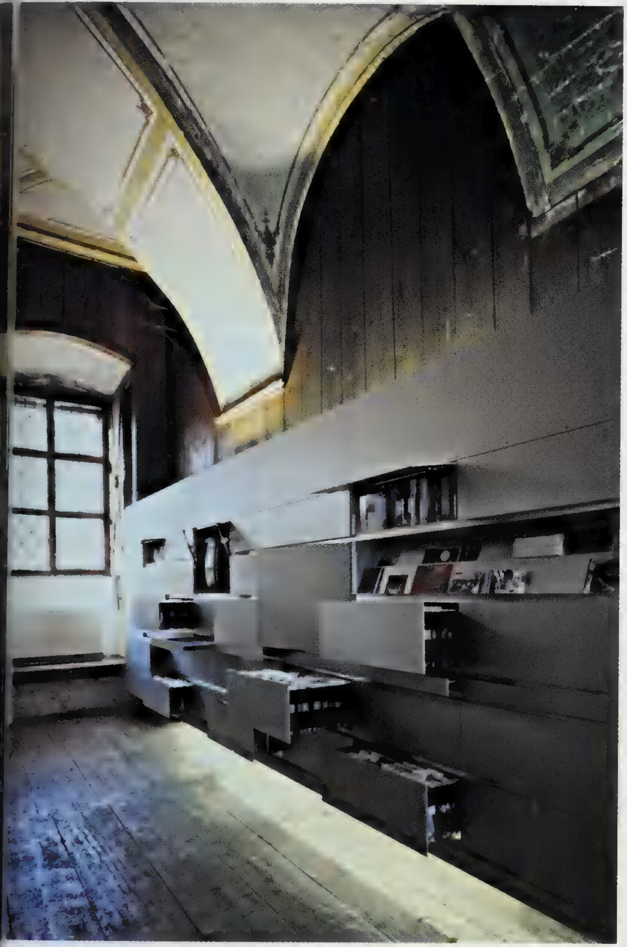
GIL fashion area 1, Vienna, Austria

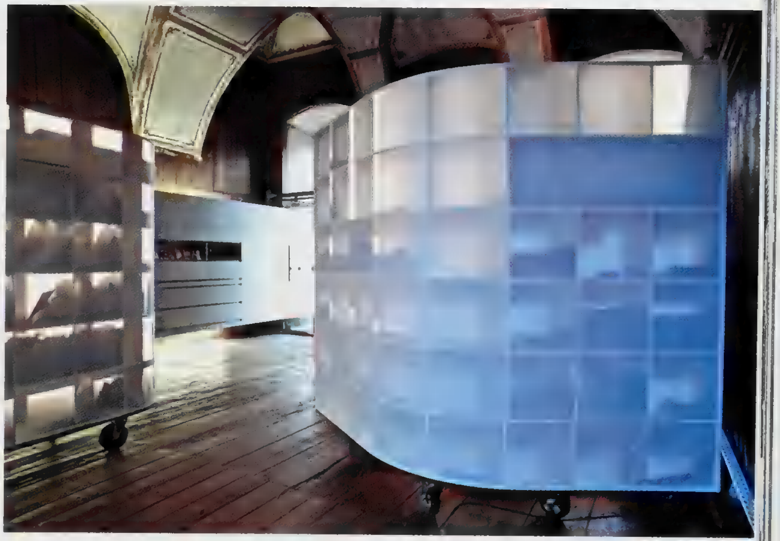
The design for this shop (this page and opposite, bottom) consciously exploits fashion-world obsessions with "seeing and being seen." The glazed facade dissolves thresholds between store and sidewalk. Parallel to the flow of pedestrian and vehicular traffic, a catwalk, underlit with fluorescent bulbs, and a long stair set against glowing lime-green walls, draw attention to ascending and descending shoppers. propeller z designed the furnishings and fittings.

Basis Wien, Vienna, Austria

For an art archive in Vienna's Museumsquartier, propeller z achieved a balanced dialogue between an 18th-century building and a modern intervention. Providing flexible space for workstations, lectures, and other events, the new elements have a luminous, floating quality—with, for example, translucent shelving units raised on castors—that keeps them distinct from the existing vaults and exterior masonry.







Peter Tolkin synthesizes outside influences into his own brand of Modernism

By Suzanne Stephens

Peter Tolkin—whose father, Samuel M. Tolkin, is an architect—tried to escape the inevitable. "Everybody in my family is in the building business, including my mother, who is a developer, along with my brother," Tolkin explains. A Leica camera, a gift from his father to seven-year-old Peter, spurred his desire to be a photographer, even to the point of getting an M.F.A. in photography at Cal Arts. Then, at some point, genetic propensities took over and architecture beckoned. In 1988, Tolkin entered Columbia University's Graduate School of Architecture, Planning and Preservation.

Tolkin's family originally came from Manhattan, so going east for architecture school was natural for him. Bernard Tschumi had taken over as dean by then, and his Modernist orientation to a three-dimensional art form that emphasizes materials and techniques appealed to the prospective student. Nevertheless, Tolkin argues that photography deepened his awareness of the relationship between society, urbanism, and landscape, and he retains a commitment to working in this area.

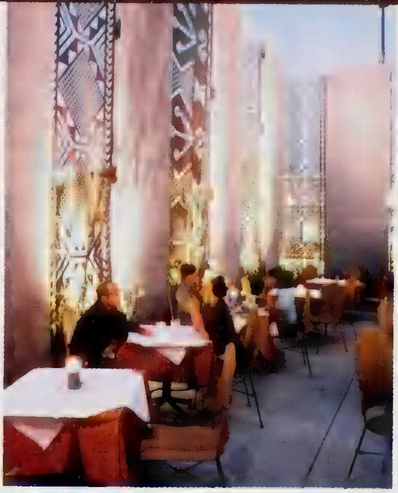
Although Tolkin first opened an office in Zurich, Switzerland, with Christine Bräm, another Columbia student in his class, he soon decided to head back west, to settle in Pasadena. By chance, the young architect rented an office next to a Thai restaurant, in a commercial area south of the historical part of town. When the owner, Dang Vattanatham, decided to open a second restaurant, Saladang Song, next to the original one, she bought out Tolkin's building. He had to move, but Vattanatham hired him and John Byram, AIA, to design her new space.

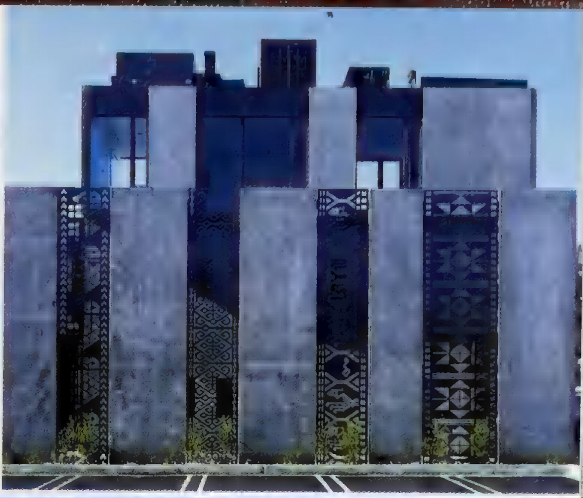
The restaurant illustrates both Tolkin's interest in construction technique and his belief that "a building's experiential meaning is enriched when it engages a larger context." The long, rectangular restaurant is constructed of vertically cantilevered concrete slabs, poured on-site. Alternating with the slabs are laser-cut steel screens, painted with metallic automobile paint and featuring patterns abstracted from Thai textiles. "We didn't want to literally borrow the motifs," says Tolkin, "but we wanted to give the client something that would relate to her culture."

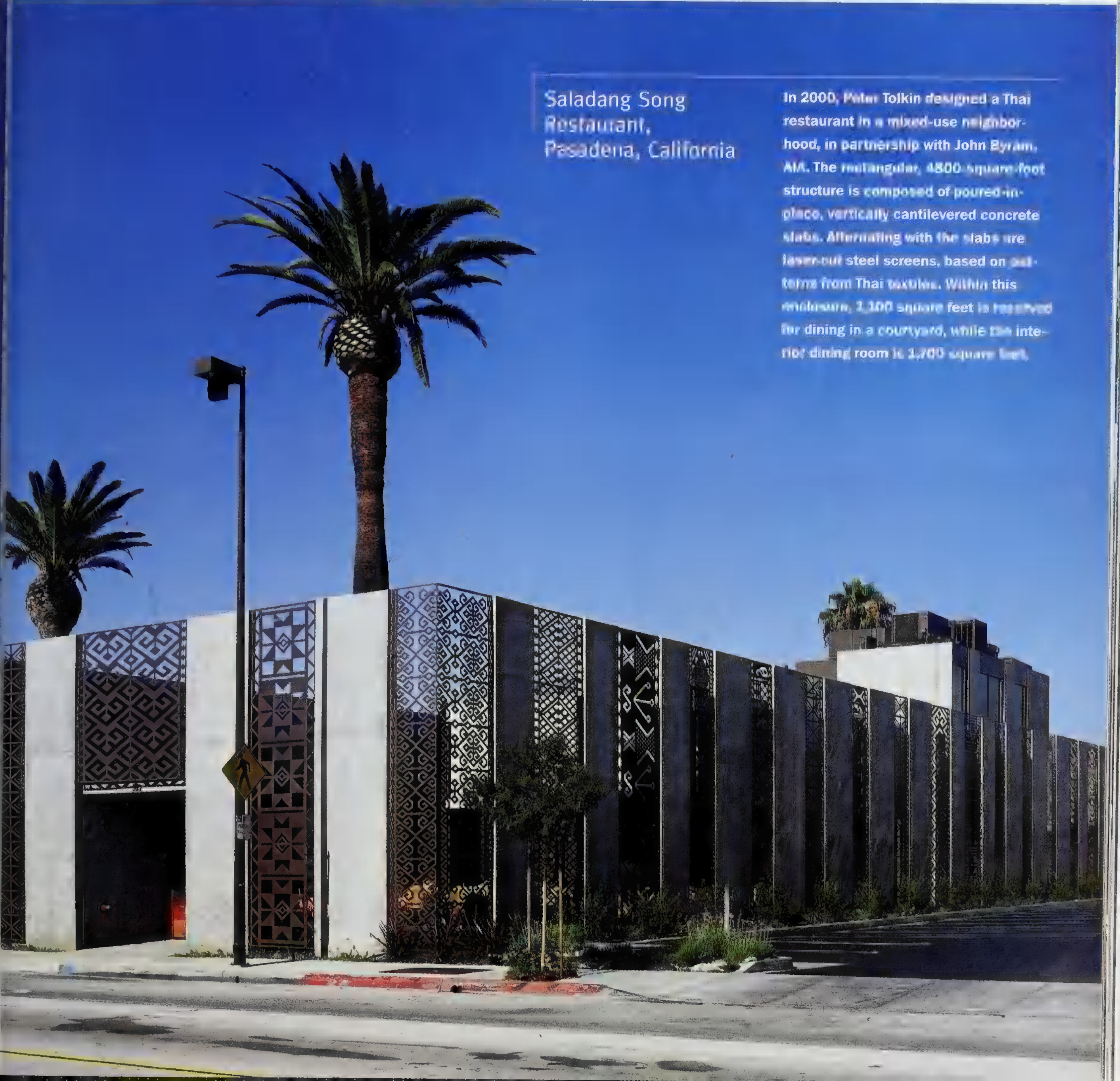
One day a pastor for the Pasadena Christian Center, a Pentecostal church, ate at Saladang Song and liked its design. Her church had bought a movie theater built after World War II, with a barrel-vaulted lamella structure for the roof. She asked Tolkin to convert it into a religious facility, to be used for children's worship and education, which he did by inserting two lamellalike wood structures under the roof. "They're not as pure as the lamella, but they allow more internal variation and could be done with the computer," says Tolkin, who worked with structural engineer Karl Blette on the scheme.

Tolkin's body of work reflects a similar fascination with construction and culture. It includes a photography studio, made of plywood panels; the renovation of a brick retail structure; the design for aluminum furniture prototypes; and, currently, a house in northern California. As Tolkin sums up, "The critical aspect of the work comes through adapting and synthesizing outside influences, instead of having a predetermined formal idea in mind." His turn to architecture seems to have been propitious. And now he is even working with his father on some projects. ■

Architect: Tolkin & Associates Architecture
Location: Pasadena, California
Date founded: 1999
Design staff: 10
Principal: Peter Tolkin
Education: University of Santa Cruz, B.A., 1984; California Institute of the Arts, M.F.A,. 1987; Columbia University, M.Arch., 1991
Work history: Sturm + Wolf Architekten, 1991–92; Bräm & Tolkin Architekten, 1993–95; Tolkin + Byram & Associates, 1997–98
Key completed projects: Promenade live-work lofts, Long Beach, Calif., 1994; "Athena's Crib" (freestanding porch), Los Angeles, 1994; Flag Shop, Whittier, Calif., 1997; Parker Photography Studio, Pasadena, 1999; Saladang Song Restaurant, Pasadena, 2000; Maison 140 boutique hotel remodeling, Beverly Hills, Calif., 2000; Sherman Residence, Encino, Calif., 2001; Quadlab graphic design studio, South Pasadena, 2001; Mainplace Merced commercial block, Merced, Calif., 2001; Pasadena Christian Center, Pasadena, 2001
Key current projects: Aluminum furniture prototypes; Private residence, Mt. Shasta, Calif.; Congregation Shaarei Torah, Arcadia, Calif.; M-Lofts, Merced; Metlox mixed-use commercial block and town square, Manhattan Beach, Calif.
Other projects: Co-author with Mabel O. Wilson of "Catfish and Coltrane," an essay on African-American artist and blues flutist John Outterbridge, published in *Architecture of the Everyday* (1997)
Web site: www.tolkinarchitecture.com

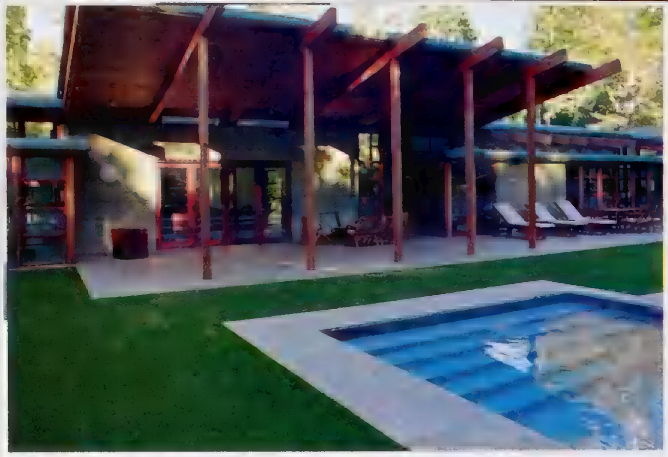


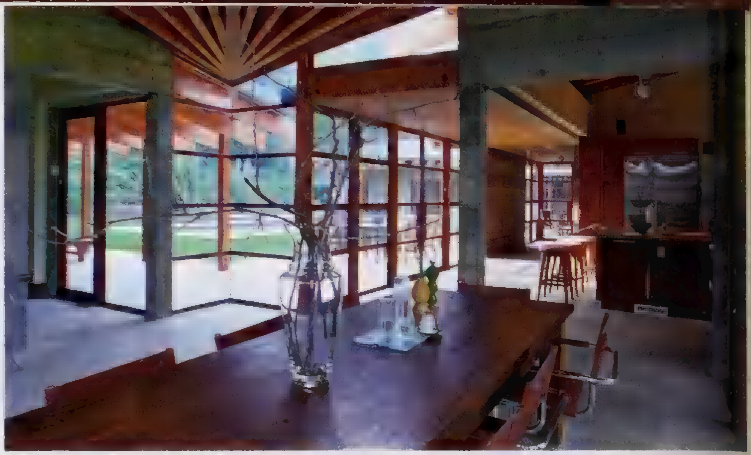




Saladang Song Restaurant, Pasadena, California

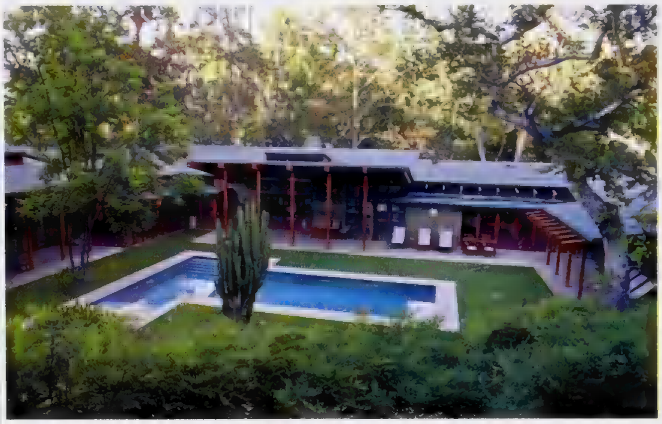
In 2000, Peter Tolkin designed a Thai restaurant in a mixed-use neighborhood, in partnership with John Byram, AIA. The rectangular, 4800-square-foot structure is composed of poured-in-place, vertically cantilevered concrete slabs. Alternating with the slabs are laser-cut steel screens, based on patterns from Thai textiles. Within this enclosure, 1,100 square feet is reserved for dining in a courtyard, while the interior dining room is 1,700 square feet.





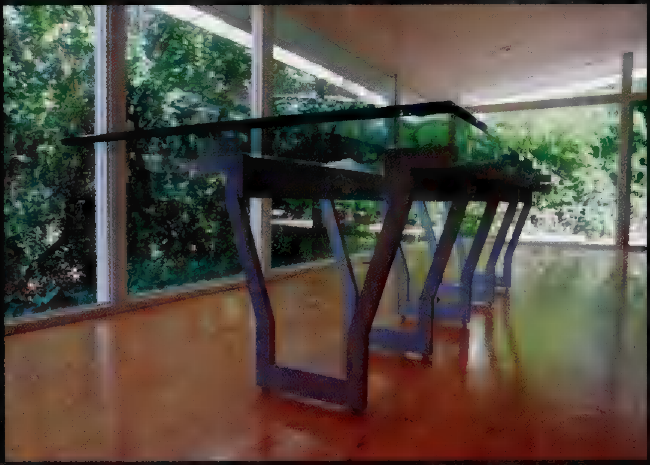
Sherman Residence, Encino, California

In designing this project with John Byram for a hillside site in the San Fernando Valley near L.A., Tolkin created a U-shaped, 4,500-square-foot house wrapping around a swimming pool. The main house is a series of poured-in-place, board-formed concrete volumes that in turn are connected by glass to open the views out to the landscape. Douglas fir is used for framing elements and ceiling surfaces.



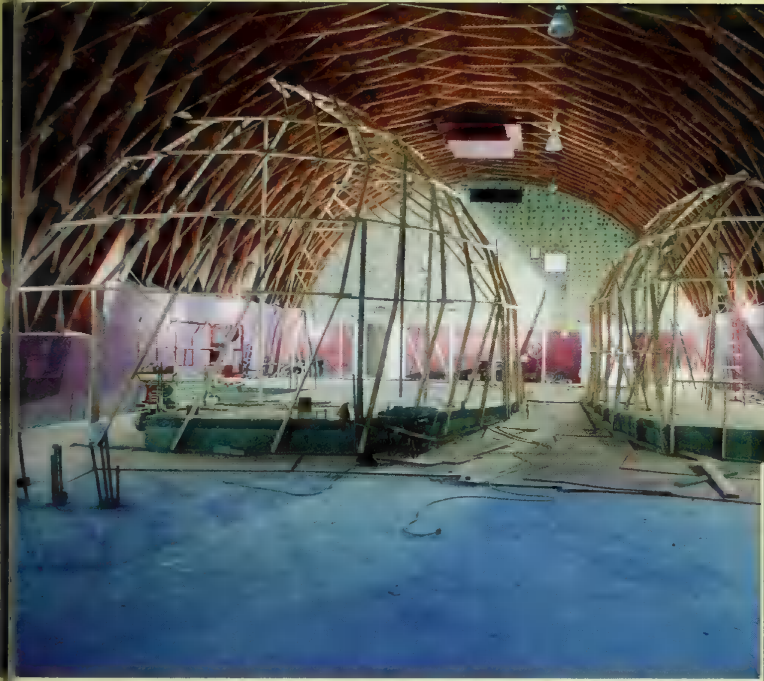
Aluminum Furniture Prototypes

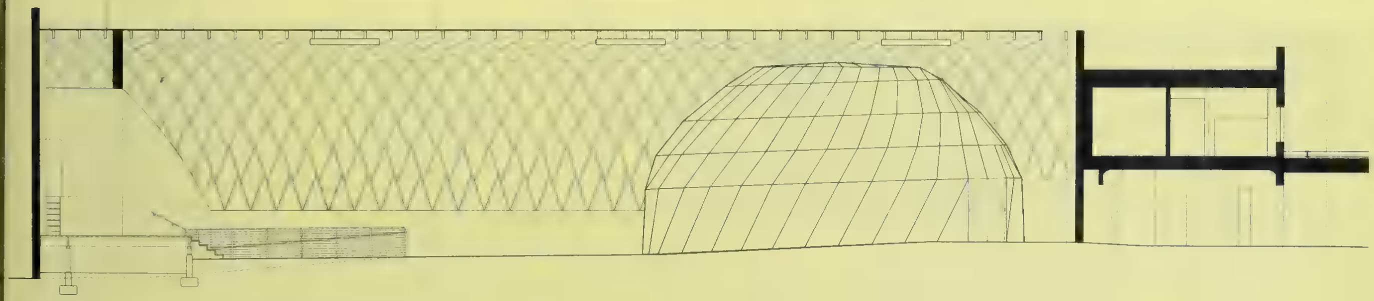
Tolkin is currently working on aluminum tables that could be produced for the general public. Parts are cut with a water jet guided by computer-generated design files. Computerized cutting allows the architect to introduce variety within a serial uniformity. The dining table (left), for a private client, makes use of a rigid skeleton of sculpted leg pieces, tied by cross bars, which can be disassembled easily using common tools.

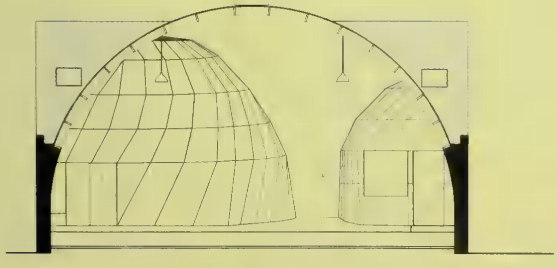


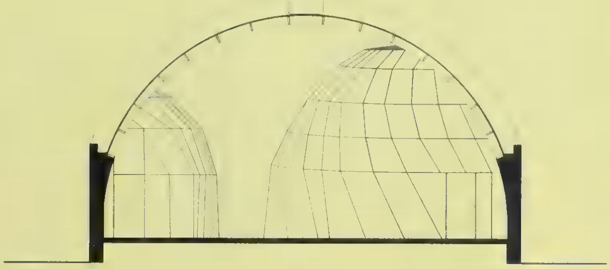
Pasadena Christian Center, Pasadena

For a Pentecostal church, Tolkin renovated a WW II movie theater covered by a barrel-vaulted roof. The roof's structure is a lamella wood frame, made of intersecting skewed arches that are formed from short members, or lamellas, fastened together in an interlocking diamond pattern. In the 7,500-square-foot building, Tolkin inserted two additional structures, variations of the lamella, for children's worship and education.



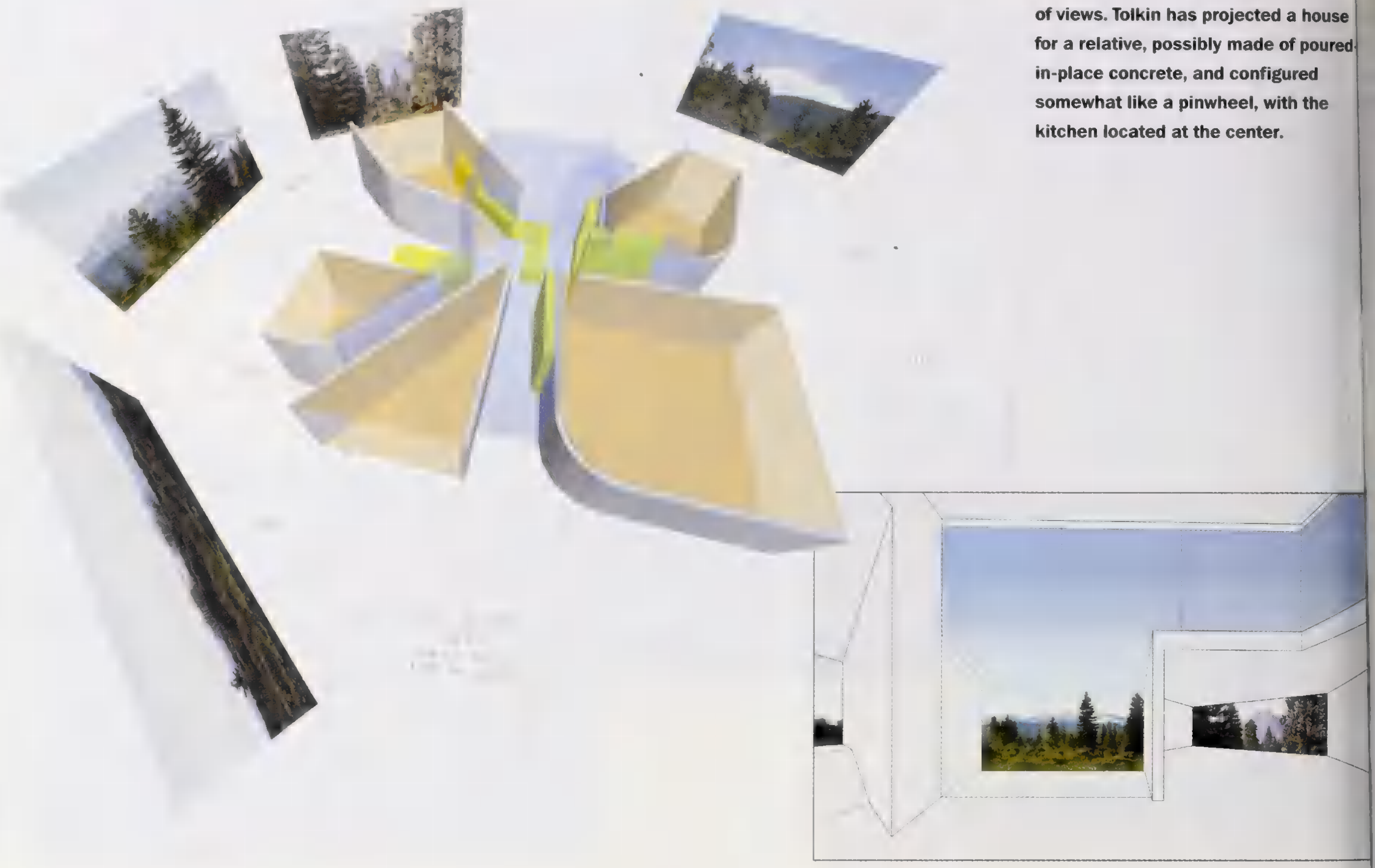






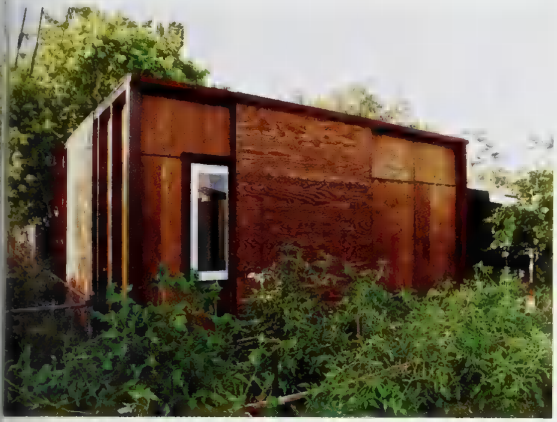
Private Residence, Mt. Shasta, California

A house on a dramatically craggy site northern California warranted a design that could take advantage of the range of views. Tolkin has projected a house for a relative, possibly made of poured-in-place concrete, and configured somewhat like a pinwheel, with the kitchen located at the center.



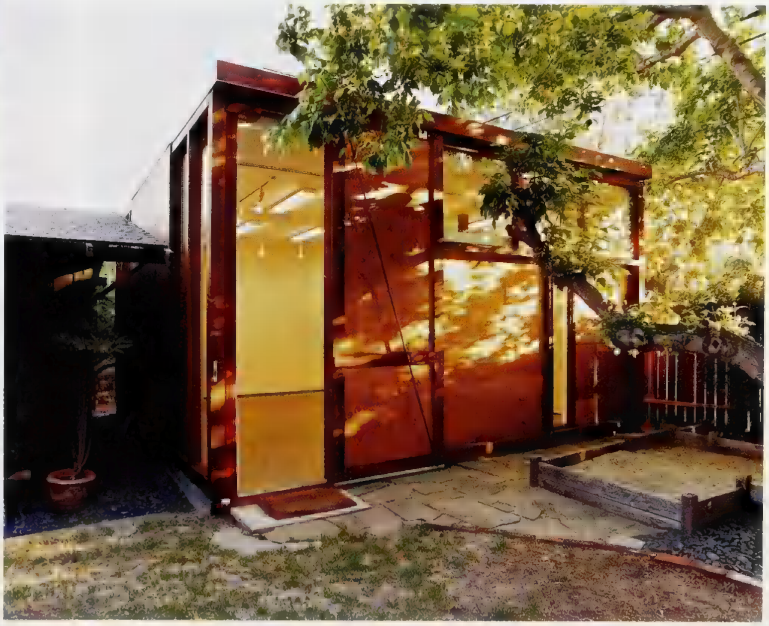
Quadlab Graphic Design Studio, South Pasadena, California

The 1,225-square-foot interior renovation of a historic brick storefront building inspired Tolkin to insert two differently scaled "boxes" within the existing shell: one a workstation for four people, the other a reception and conference area. The saturated colors were chosen to intensify the difference between the new construction and the brick enclosure.



Parker Photography Studio, Pasadena, California

As the primary designer in partnership with John Byram, Tolkin created a small, 420-square-foot building of redwood posts and plywood shear panels, which bears a similarity to a shipping crate. The plywood panels articulate the wall, and the exposed screws provide an ornamental expression that Tolkin sees as appropriate to the backyard of a 1920s Craftsman bungalow for an artist.



Tezuka Architects marries East with West while blurring the border between inside and ou

By Naomi R. Pollock, AIA

Architect: Tezuka Architects
Location: Tokyo
Date founded: 1994
Design staff: 14
Partners: Takaharu and Yui Tezuka
Education: Takaharu: University of Pennsylvania, M.Arch., 1990; Musashi Institute of Technology, B.Arch., 1987;
Yui: The Bartlett School of Architecture, University College of London, 1992–93; Musashi Institute of Technology, B.Arch., 1992
Work history: Takaharu: Richard Rogers Partnership, 1990–94
Key completed projects: Thin Wall House, Tokyo, 2002; Hounancho Condominium, Tokyo, 2002; Thin Roof Sukiya, Kanagawa, Japan, 2002; Anthill House, Tokyo, 2002; House to Catch the Sky II, Tokyo, 2002; Step House, Shizuoka, Japan, 2001; North Face Store, Fukuoka, Japan, 2001; House to Catch the Sky, Kanagawa, 2001; Wall-less House, Tokyo, 2001; Balcony House, Kanagawa, 2001; Butterfly House, Kanagawa, 2001; Light Gauge steel Studio, Tokyo, 2001; Roof House, Kanagawa, 2001; Megaphone House, Kanagawa, 2000; Machiya House, Tokyo, 2000; Kawagoe Music Apartment, Saitama, Japan, 2000; Light Gauge Steel Building, Tokyo, 1999; Light Gauge Steel House, Kanagawa, 1999; Wood Deck House, Kanagawa, 1999; Soejima Hospital, Saga, Kyushu, Japan, 1996
Key current projects: Canopy House, Tokyo, late 2002; Saw Roof House, Tokyo, late 2002; Matsunoyama Natural Science Museum, Nigata, Japan, 2003; House in Kanagawa, 2003; House in Wako, Saitama, Japan, 2003; House in Setagaya, Tokyo, 2003; House in Meguro, Tokyo, 2003; Soejima Clinic, Fukuoka, 2003; Hiroshima Factory, 2003

What troubled economy? With some 20 projects on the boards—ranging from single-family houses and office buildings to a factory and a museum—the Tokyo-based couple Takaharu and Yui Tezuka are not exactly feeling the pinch. "As clients find our projects in the magazines," chuckles Taka, "we keep getting more work."

Taka and Yui, both in their thirties, make quite a splash—he wears only blue shirts, she red, and their Citroën is bright yellow. But what garners all the attention—winning them prizes and drawing accolades within Japan and beyond—is their innovative way of connecting architecture with the environment. Blending East with West, their approach combines traditional Japanese qualities—especially a tendency to blur borders between inside and out—with influences from the conceptually rich architecture they saw while living and working overseas. Because the Tezukas perceive design training as a weak point in Japanese architectural education, they both felt a need to complete their graduate studies abroad, he in Philadelphia and she in London.

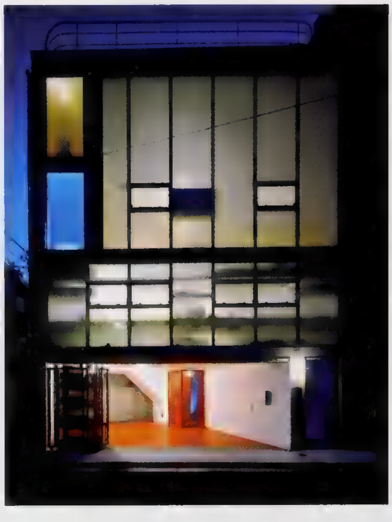
Their first chance to test their skills back home came with the 43,900-square-foot Soejima Hospital on Kyushu island. Usually Japanese newlyweds receive cash or modest gifts, but this couple returned from their 1992 wedding reception with a commission from a relative to design the hospital. Their building eliminates typical Japanese hospital windows rising from waist-level sills, in favor of floor-to-ceiling glass with louvers. "If patients see only the sky, they may think 'that's where I am headed,'" says Yui. "But if they see the town, they won't want to give up."

Roof House (2001), by contrast, tends to direct views skyward. Inspired by clients who lunched daily on the roof of their previous home, the architects capped the new house with a gently sloped, open-air dining area, kitchen, and shower. The rooftop nearly doubles the habitable space. Skylights and ladders link the lofty terrace to the rooms below.

At least as unconventional, the Tezukas' competition-winning scheme for Matsunoyama Science Museum in Niigata Prefecture rejects the idea of an introverted museum, instead channeling sight lines outward from the building. Because the structure will stand "in the middle of nature," says Taka, "its views out will have much greater impact than objects in a case." A snakelike, 427-foot-long tube of Cor-ten steel, the building will offer lookout points where it bends and will culminate in a 112-foot-high tower. Thick-skinned and seamlessly jointed, the museum will be built like a submarine to withstand the site's annual 18-foot-deep snowfalls.

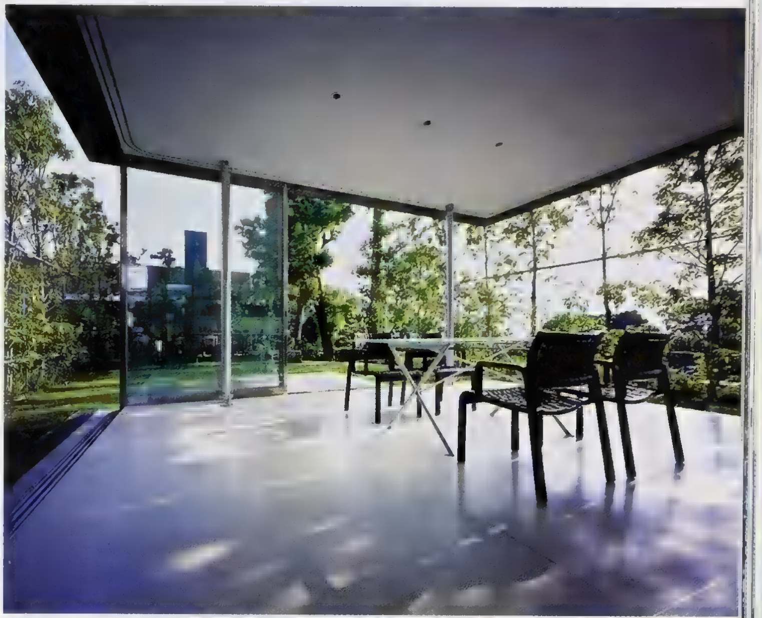
Though headed for large-scale work, the Tezukas remain fond of designing houses. "How people live is a basic idea of architecture," says Yui. With the recent completion of a two-family house for themselves, their new baby, and Taka's parents, the couple will now have a great opportunity to experience their own architecture firsthand. ■

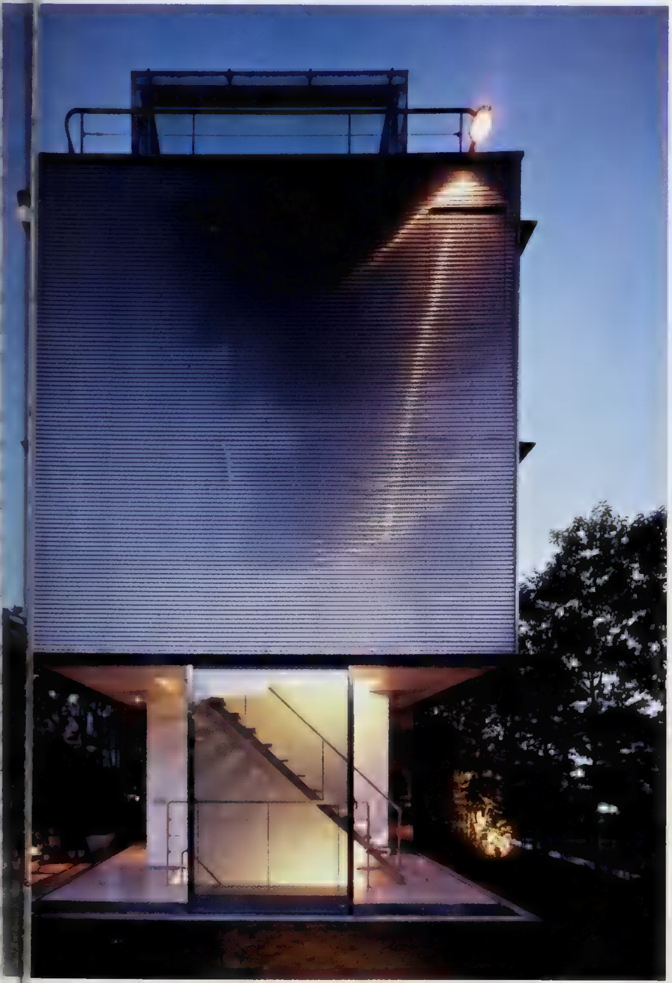
Anthill House
Tokyo

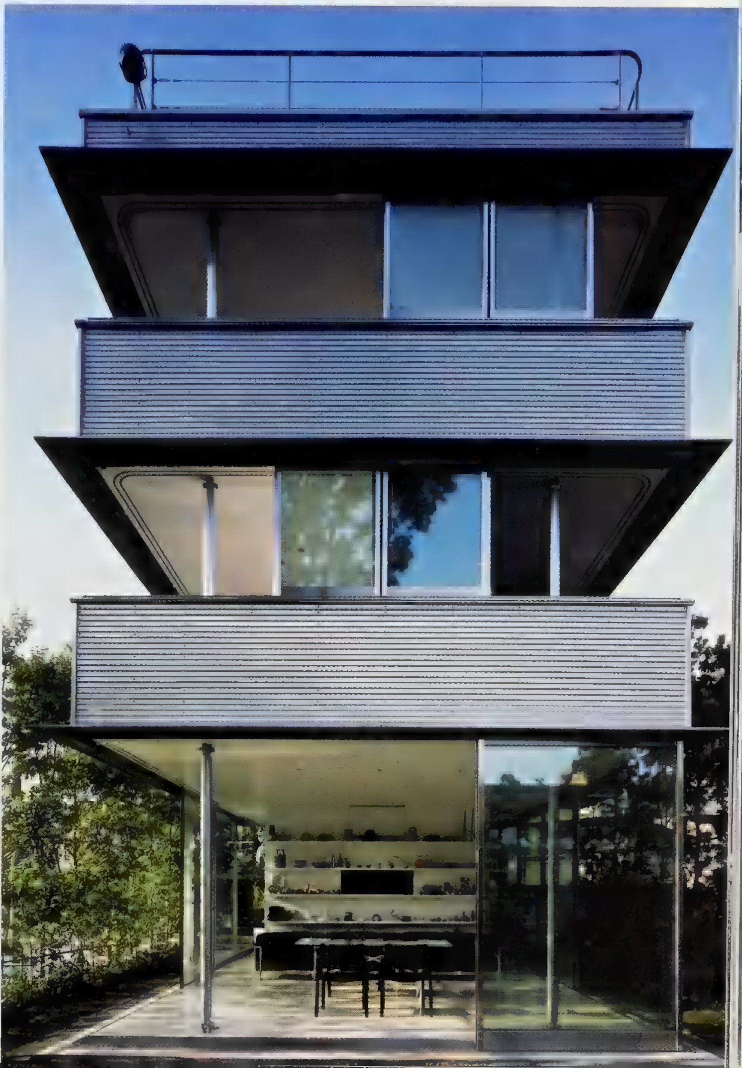


W ll-less House, T kyo

Akin to a countryside villa, the Wall-less House occupies barely 20 percent of its wooded site. A lightweight, load-bearing steel frame permits axial loads to rest on only a central utility core and two thin columns. This configuration permits the living space to open up to the outdoors on all four sides. The floors appear to float amid the surrounding greenery, which adds a layer of privacy.

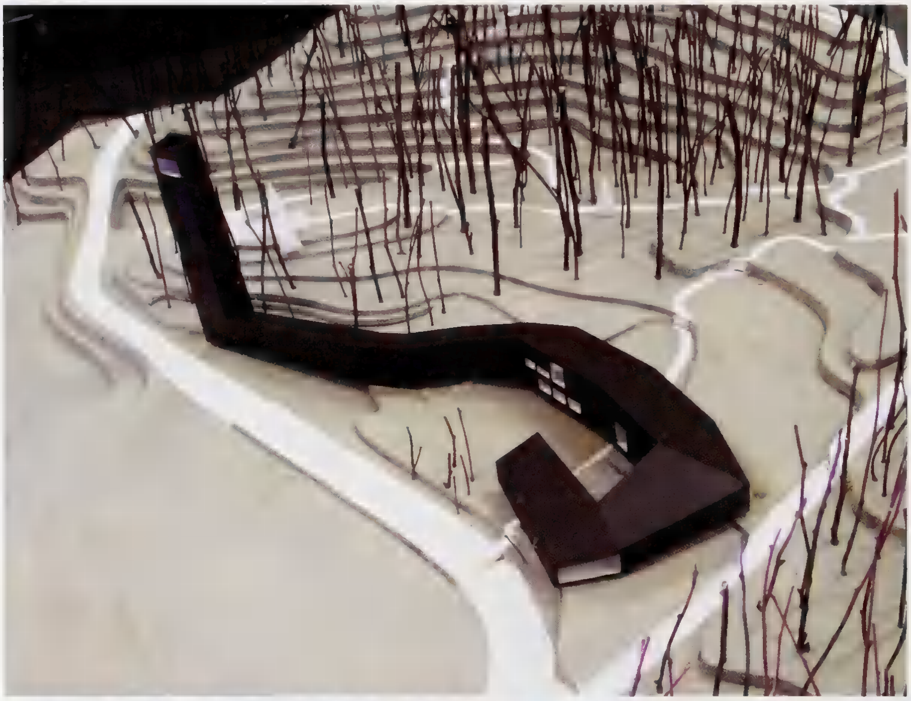


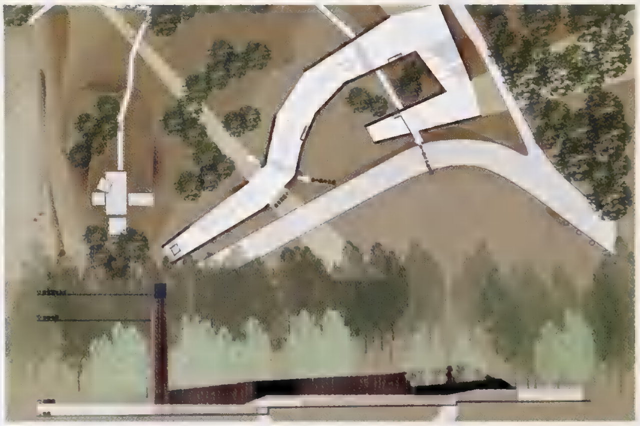




Soejima Hospital, Saga Prefecture, Kyushu, Japan

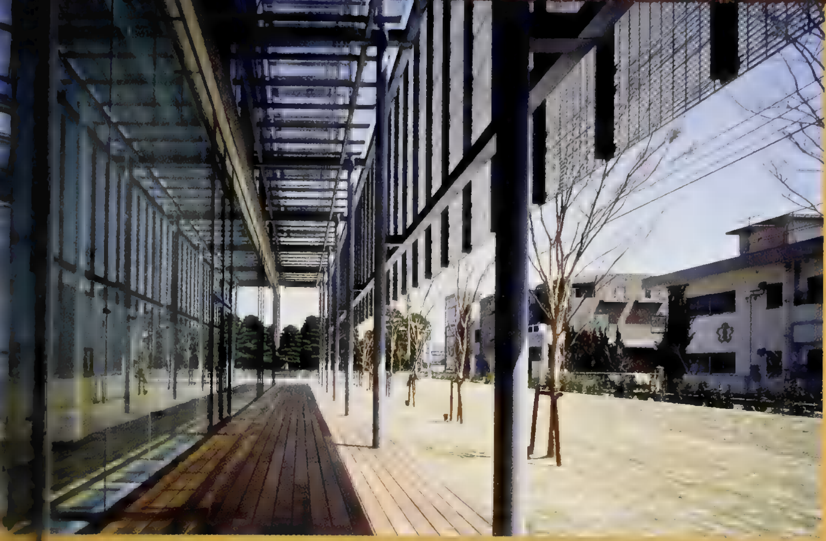
To provide patients with a comfortable environment and contact with the natural setting, the Tezukas maximized southfacing windows on this long, narrow site. They thus opened patient rooms to a serene landscape to the south while blocking off noise from the north. A louvered balcony system allows for mediation of daylight and shade, natural ventilation, and readily accessible outdoor space.

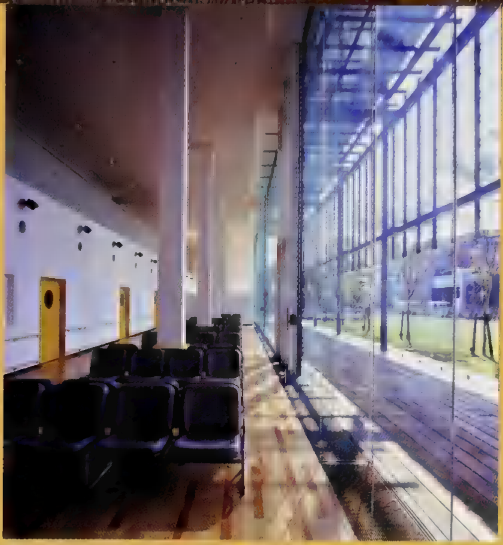


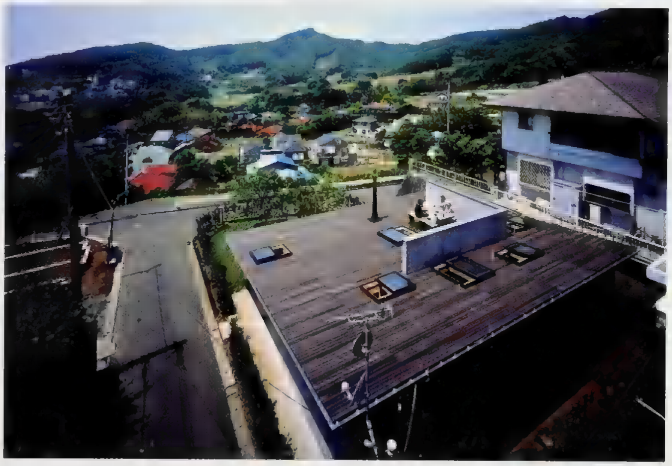


Matsunoyama Natural Science Museum, Nigata Prefecture, Japan

The museum will have a 427-foot-long serpentine form, clad in Cor-ten steel, with a submarinelike construction designed to withstand the region's extreme snowfalls. Optimizing views to the landscape, the snaking structure will have 10-ton acrylic panels at its bends, offering multiple lookout points. The building will culminate in a 112-foot-high tower, illuminated by an internal sensor capable of transforming energy absorbed from the atmosphere into light—a fitting display for a museum of science.







Roof House, Kanagawa, Japan

Inspiration for this house came from the clients, who regularly lunched on the roof of their previous house, despite its steep pitch. The Tezukas topped this new building with a 10:1 slope, which echoes the original topography of the ground below and can readily accommodate rooftop dining, cooking, and showering. Eight skylights equipped with ladders connect each enclosed ground-floor room with the roof terrace above it.

René van Zuuk twists architectural forms to make technology expressive

By Tracy Metz

Architect: René van Zuuk Architekten
Location: Almere, the Netherlands
Date founded: 1993
Number of design staff: 5
Education: Technical University of Eindhoven, M. Sciences, 1988
Work history: Skidmore, Owings & Merrill, London and Chicago, 1988–89; Facilitair Bureau voor Bouwkunde Rotterdam, Hoogstad, van Tilburg Architecten, 1989–92
Key completed projects: Art Pavilion "De Verbeelding," Zeewolde, the Netherlands, 2001; Center for Plastic Arts "CBK," Alphen aan de Rijn, the Netherlands, 2000; Educational Farm "Griftsteede," Utrecht, the Netherlands, 1999; 4 Canal Houses, Java Island, Amsterdam, 1997; Lock House "Oostersluis," Groningen, the Netherlands, 1995; Clubhouse "De Toekomst," Amsterdam, 1996; Stand "De Toekomst," Amsterdam, 1996; Villa van Diepen, Almere, 1995; 8 Bridges, Nieuwsloten, the Netherlands, 1993; Villa Psyche, Almere, 1992
Key current projects: ARCAM Architectural Center, Amsterdam, 2003; Blok 16 housing and fitness complex, Almere, 2003; Bridge for bicycles and pedestrians, Almere, 2003; Bridge Keeper's House, Middelburg, the Netherlands (unbuilt); Pier, Almere, 2003; Office Building "De Prins," Enschede, the Netherlands, 2003; Office Building "Zilverparkkade," Lelystad, the Netherlands, 2004
Web site: www.renevanzuuk.com

When Dutch architect René van Zuuk built his first project, his own house in the new town of Almere, it raised eyebrows outside, as well as inside, the Netherlands. The year was 1992, Van Zuuk was 30 and unknown, and here was this house, part science fiction, part dolled-up Corbusian living machine, with a sculptural, almost animal-like quality that immediately set it apart from its contemporaries. "The hardest thing about it," he says dryly, "was finding a bank willing to give me a mortgage." He still lives in the house, which he named Psyche.

Over the past 10 years, Van Zuuk has found a way of making technology expressive that gives him a unique voice in an architectural culture that has no dearth of outspoken forms. In his designs he strives for what he calls "intelligent distortion": simple forms that are transformed and practically set in motion by the bending and folding of their materials and their subjection to torsion. "I still stand firmly in the European tradition of 'honest' building," he states. "My starting point is not the shape, or a computer model, but technology. I'm fascinated by finding ways to use construction techniques to create new forms in buildable and affordable buildings." He doesn't like having his work described as organic or anthropomorphic—even though his Lock House in Groningen and his Bridge Keeper's House in Middelburg have been likened more than once to the endearing film character E.T. "That sounds as if there is no system to them, while in fact there is a very carefully worked-out system. After all, I studied construction technique at the Technical University in Eindhoven."

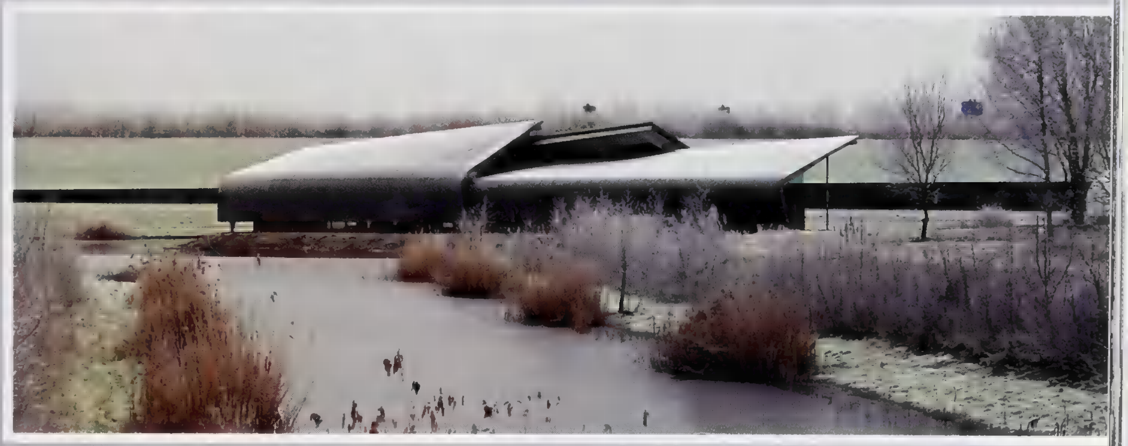
Thanks to that training, he stays involved with a building from the start of the design phase all the way through construction. His latest project in Amsterdam, now under construction, is already on many people's must-see list: an exhibition-space-cum-office for the Amsterdam Center of Architecture (ARCAM). Located on the water behind Central Station, near the prow-shaped science museum designed by Renzo Piano, this extruded, three-story pavilion is intriguingly complex though seemingly simple. The sleek design features a zinc-coated aluminum skin that slides up on one side and is pulled down to ground level on the other.

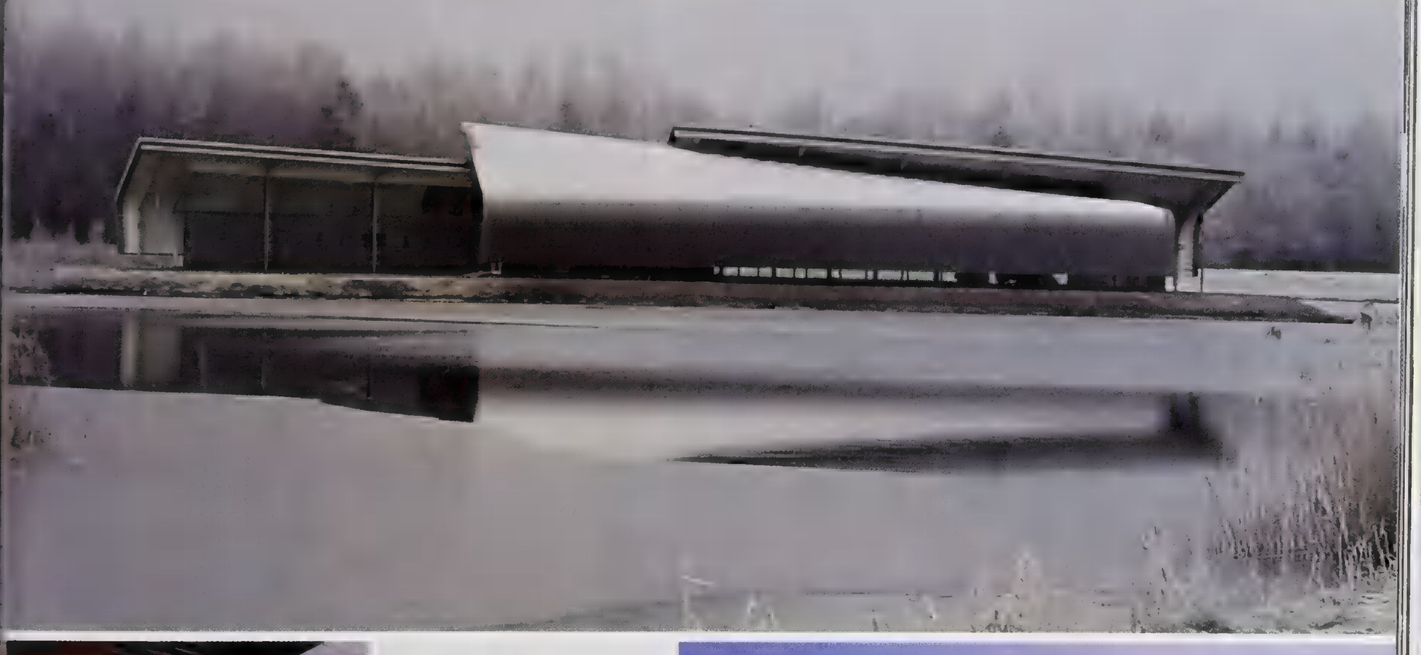
Van Zuuk doesn't want to get pigeonholed as a designer of precious jewelry boxes—even though he did do a precious, as yet unrealized, design for a jeweler's shop in Weert. "I want to investigate how big you can make a sculptural building without losing that quality." For Almere, he designed a housing block with 42 apartments and a fitness center, now under construction, while another big commission, a 75,000-square-foot office building for the Dutch Railways, is on hold because of the current glut of office space. His art pavilion, "De Verbeelding" (the imagination), for the new town of Zeewolde, was nominated at the Venice Biennale this fall for a new prize the Netherlands Architecture Institute has established for work by architects under 40 living in Holland.

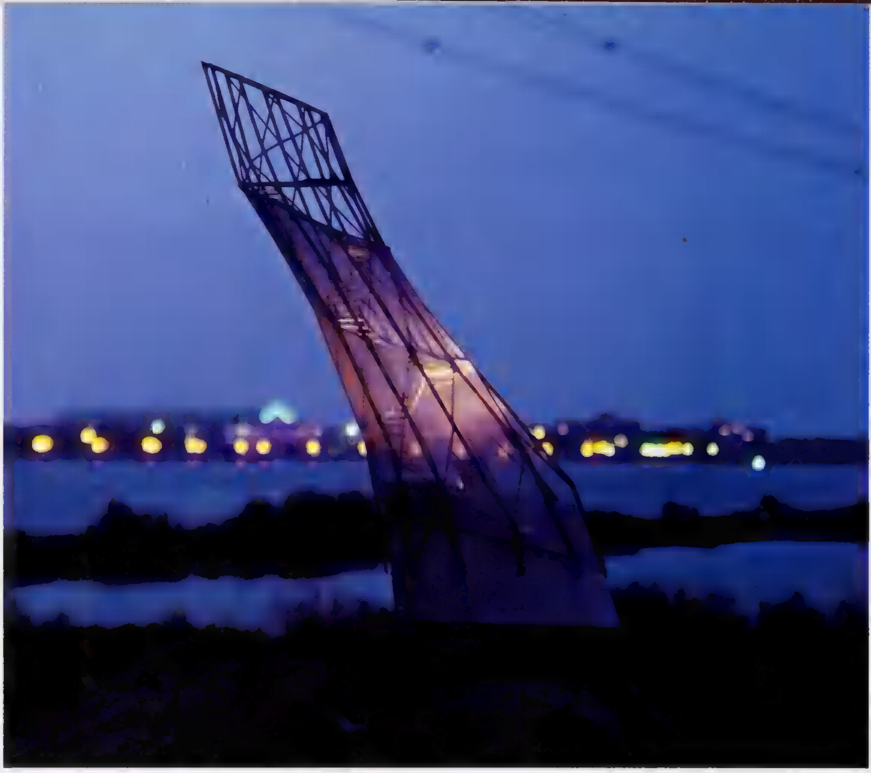
Van Zuuk's office is small, just five people. He's under no illusions; he knows the market for eyecatchers like his will never be big. Most of his clients are institutions, not private individuals. "People are quite happy to work in an extreme office building, but they want to go home to a farmhouse." ■

rt Pavilion,
eewolde,
e Netherlands

Part of a landscape-art center, this exhibition building (called "De Verbeelding," the imagination) serves as the start of a 4-mile route through forest and reclaimed land. The building is composed of three curved planes supported by wooden rafters that are slightly skewed in relation to one another. The architect says he was inspired by simple sheds found in Dutch polders.

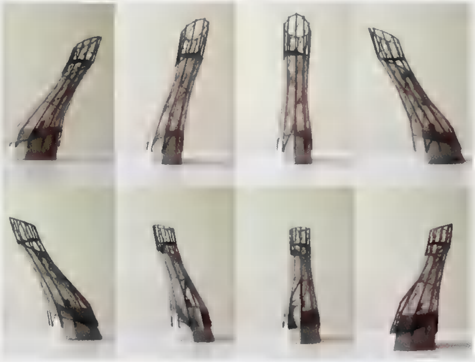






Bridge Keeper's House, Middelburg, the Netherlands

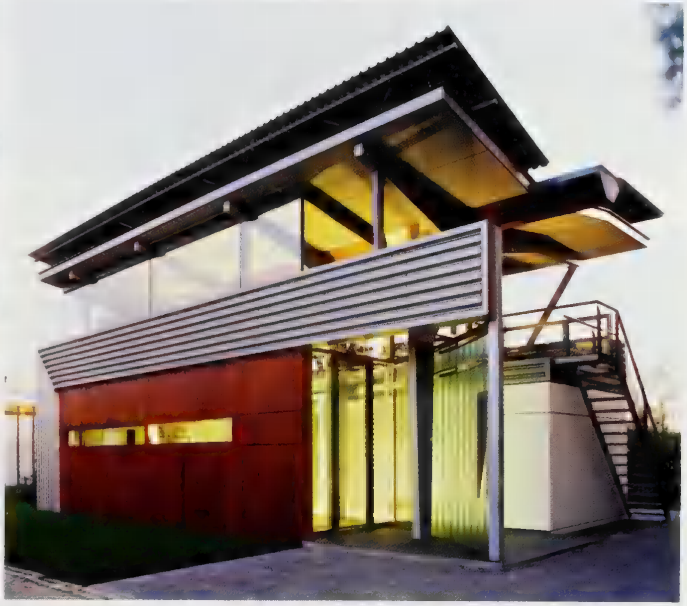
Because it will be used only five days a year, Van Zuuk designed this house (clockwise, left center to right center) so it can also serve as a light sculpture. As he tries to do with all his projects, the architect investigated various structures, grids, and building systems, then deformed them to create the animated form of this project.

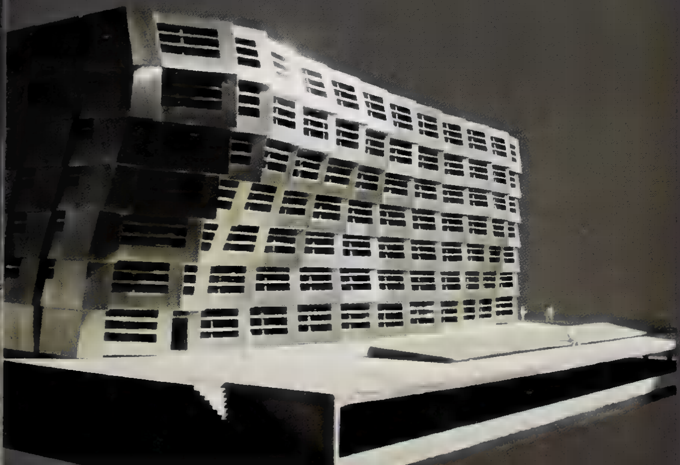


PHOTOGRAPHY: © RENE VAN ZUUK (BRIDGE KEEPER'S HOUSE, BLOCK 16); HERMAN VAN DOORN (PSYCHE)

Villa Psyche, Almere, the Netherlands

The first project that Van Zuuk completed, Villa Psyche won a competition that challenged architects to design houses for themselves and build them. A two-story entry hall occupies half of the house and serves as the key organizing element for the design. A living room on the upper level has a sleek, shiplike feel and takes advantage of 360-degree views of the surrounding landscape. The project helped jump-start Van Zuuk's solo career.



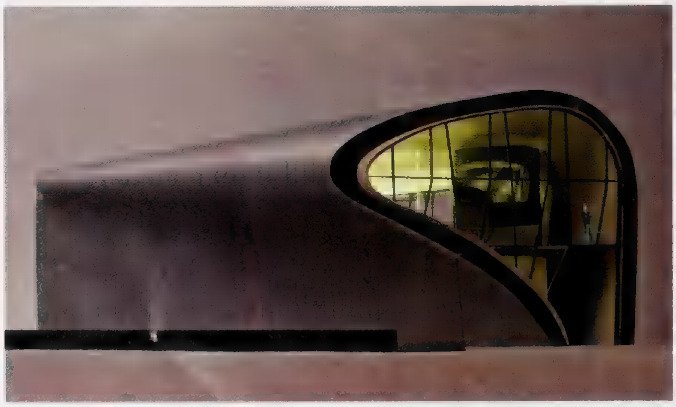


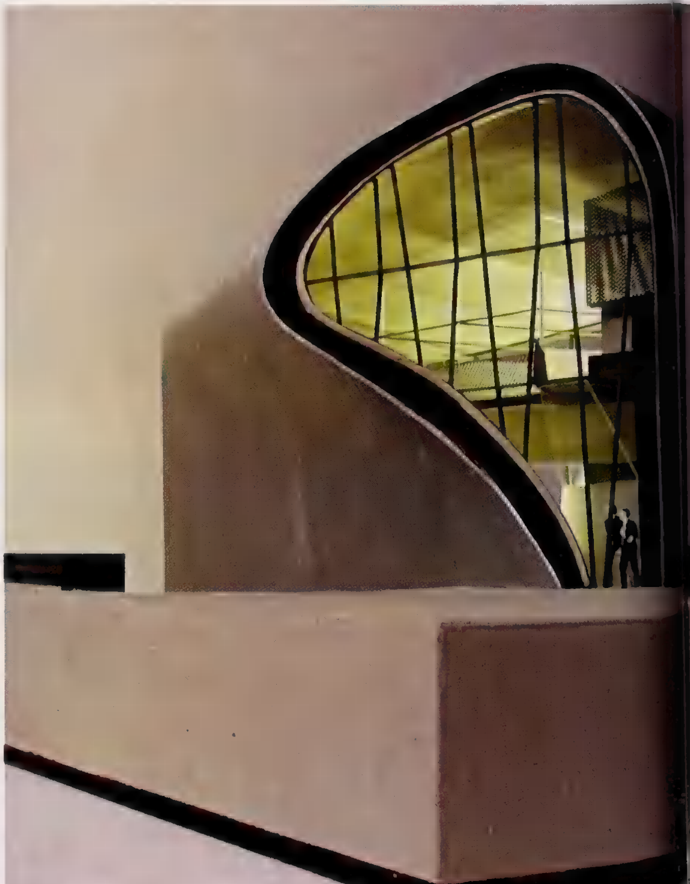
Block 16, Almere, the Netherlands

Set within a city center master planned by Rem Koolhaas, this project (left and opposite, bottom) will include 42 apartments and an 18,000-square-foot fitness center. The design employs a concrete-casting system, normally used in tunnel construction, in which N-shaped molds form walls and a floor at the same time. The project is under construction and scheduled to be completed in 2003.

ARCAM, Amsterdam

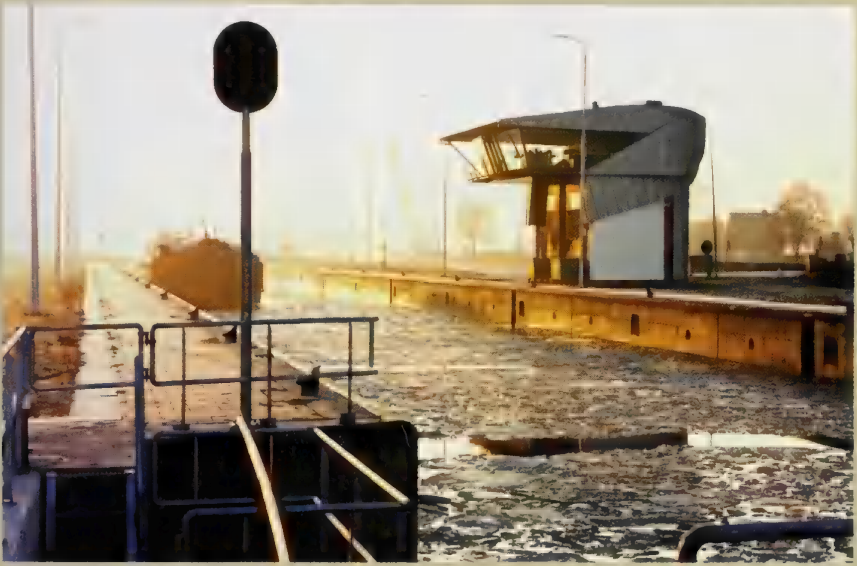
Located on Amsterdam's waterfront between Renzo Piano's NEMO science center and the Netherlands Maritime Museum, this project will provide exhibition and office space for the Amsterdam Center of Architecture. The building, which is under construction and set to open in the spring of 2003, features a zinc-coated aluminum skin that's tautly wrapped around a steel frame.





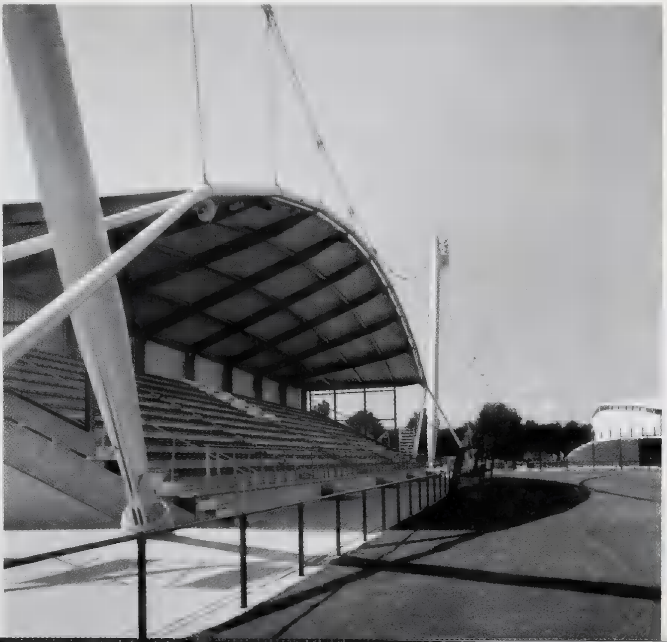
Lock House, Groningen, the Netherlands

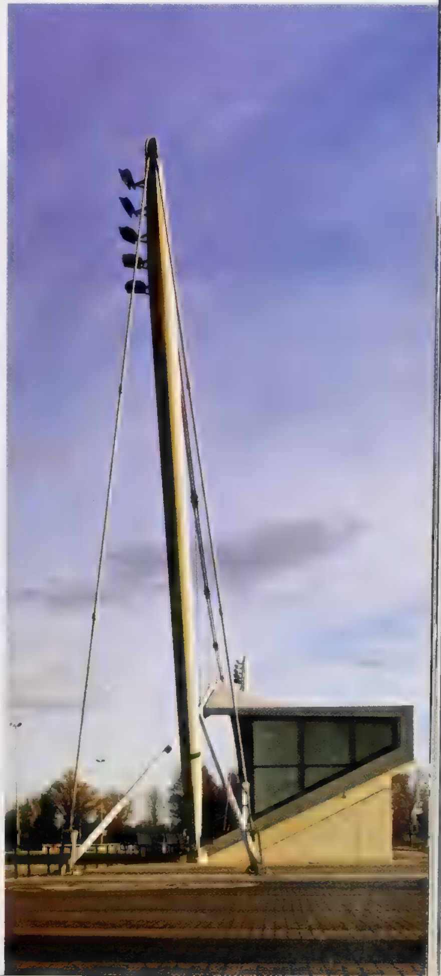
A service house for workers overseeing six bridges and a lock in the Van Starkenborg canal, this building is a good example of Van Zuuk's strategy of "intelligent distortion," in which he bends and twists simple forms into richer, more animated architectural expressions. Designed in 1995, the building opened the following year.



Ajax Grandstands, Amsterdam

One of three projects that Van Zuuk has designed for Ajax, the popular soccer team, this grandstand features a roof suspended from cables hung from a tall, angled mast. The mast gives the project a presence from a distance that a traditional grandstand would not have. The architect has also designed a clubhouse and office space for the team.





PHOTOGRAPHY: © ARTHUR BLONK (LOCK HOUSE); HERMAN VAN DOORN (LOCK HOUSE AND GRANDSTAND)

Plexus r+d fuses imagination and intellectual rigor with worldly, practical optimism

By Sara Hart

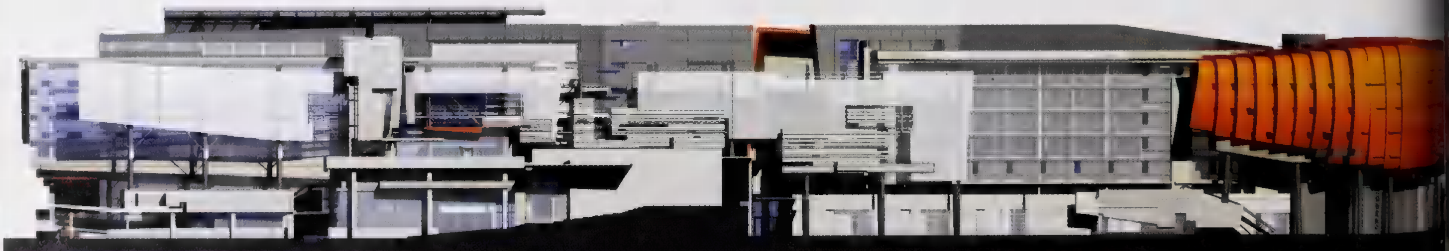
Architect: Plexus r+d
Location: Atlanta
Partners: Jordan Williams (right), Erik Lewitt
Design staff: 7
Education: Williams: Princeton University, 1992; University of Florida, 1988;
Lewitt: Princeton University, 1992; University of Florida, 1989
Work history: Williams: JSA, 1998–2000; Cooper Carry, 1996–98;
Lewitt: JSA, 1999–2000; Farrington Design Group, 1996–99
Key completed projects: La Villa office building (with JSA), Jacksonville, Fla., 2002; Southern Polytechnic State University Gateway, Marieta, Ga., 2001; Husk Jennings Advertising (with JSA), Jacksonville, 2001; Barcelona Residence, Jacksonville, 2001; Franklins Printing (with Farrington Design Group), Atlanta, 2000
Current projects: Beijing Zhongguanchun Life Science Park (with JSA), Beijing, People's Republic of China (2004); Scitrek Technology Museum, Atlanta, 2003; Midtown West master plan, Atlanta, 2004; Kawczak Residence, Atlanta, 2003; Massey Residence, Atlanta, 2003
Web site:
www.plexus-architecture.com

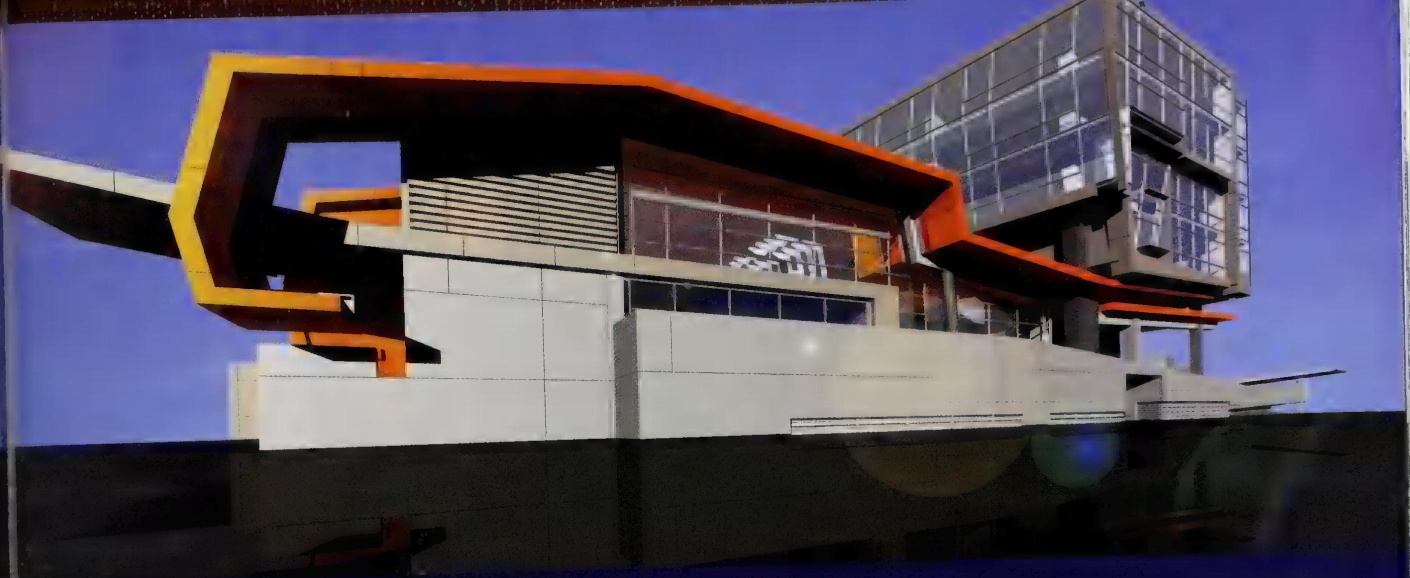
A plexus is a structure formed by a collaborative network of branches that strain to create complex connections and experiences. A plexus then is the perfect conceptual metaphor for an architecture firm that endorses complexity, designs by digression, and is propelled by a genuine optimism. Partners Jordan Williams and Erik Lewitt see their mission as one "to explore the manifold relationships between culture and design through the mediums of architecture, interiors, graphics, and event staging. We are interested in exploring strategies for resisting the increasing cultural irrelevance of architecture." The *r+d* following Plexus is their alter ego and represents their commitment to both learning and teaching.

The partners have collaborated on competitions since 1994, while interning at mainstream firms. "We deliberately avoided the star architects," insists Williams, reasoning that they could develop their own ideas right out of the academic shoot in environments not dominated by a master and a stable of disciples. Since formalizing their partnership in 1999, Williams and Lewitt have captured some high-concept projects, which have allowed them to cultivate a rigorous and seemingly labor-intensive design system—or plexus—composed of three intersecting strategies. First, content research takes them on a treasure hunt for images and materials that will inform the project. Next, a methodology emerges, unique to each project, in which meaning is limned from the content, presumably prompting an editing and honing process. Finally, they impose a serious belief system on this controlled anarchy, which insists that the purpose of architecture is to enrich lives, to be culturally productive, and to challenge the buildings' inhabitants.

Williams and Lewitt want their projects built, so this belief system also mandates a sense of accountability and attention to detail, and they seem to embrace tight budgets. "We use detailed computer and physical models to provide contractors a thorough representation of the project," explains Williams. "These tools allow the projects to be bid without guesswork on the contractor's part."

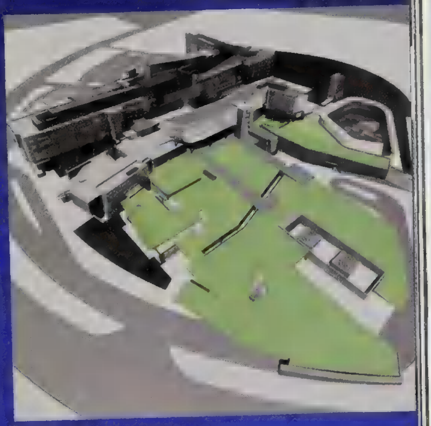
Already they've achieved a worldly, practical optimism, rather than embracing the unrealistic idealism that characterizes most young firms. Plexus r+d maintains quite the balancing act between "imagination and diligence, intuition and rigor." One can only hope that they represent a new generation of fearless professionals who can make architecture relevant again. ■

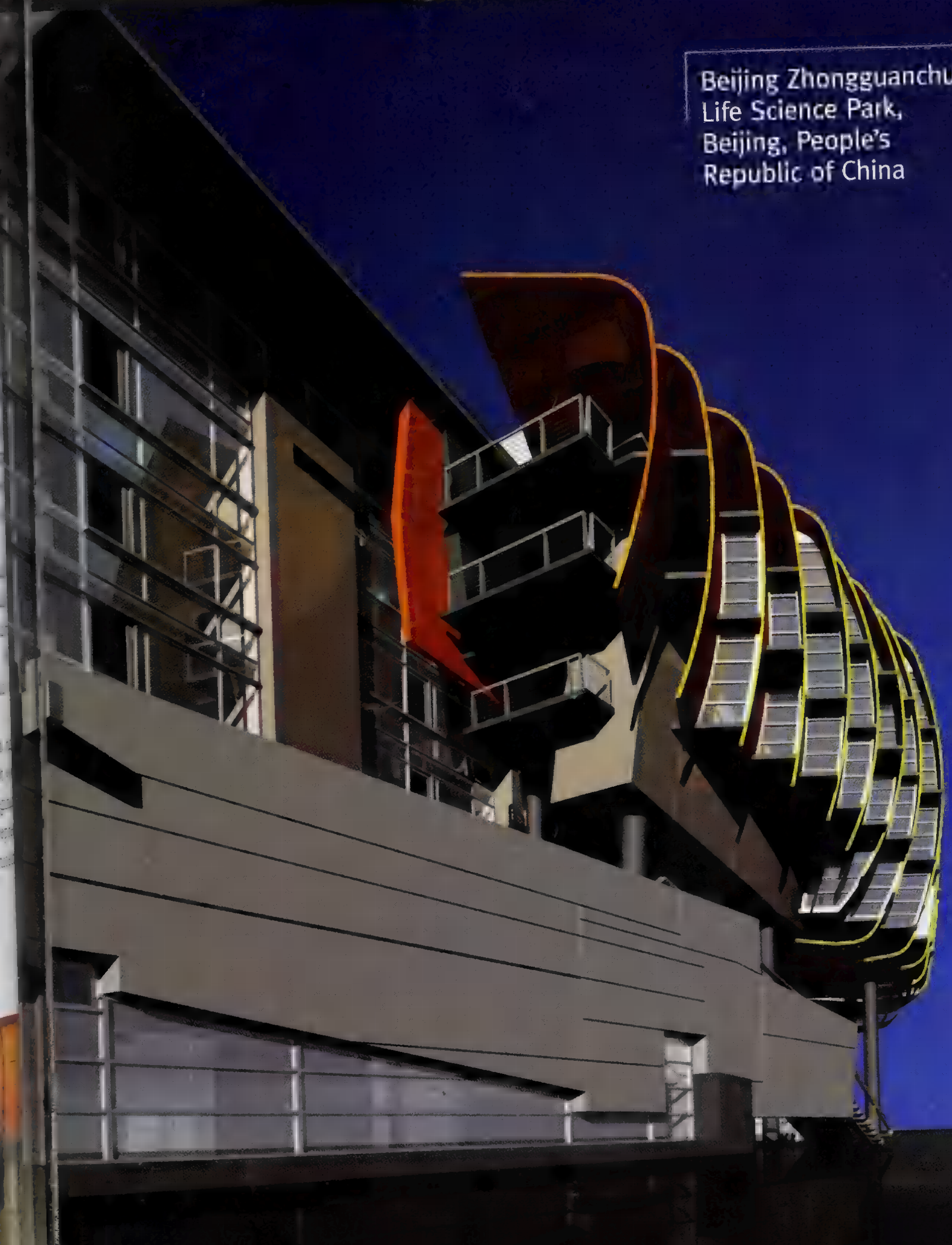




Beijing Zhongguanchun Life Science Park, Beijing, People's Republic of China

The firm won a competition to design the Conference and Exhibition Center for a new 6 million-square-foot suburban park, showcasing life-science industries in China. By pursuing digressive connective devices instead of a single hierarchical ordering system, the architects created an urban fabric with diverse links to an elaborate exterior of plazas and gardens.





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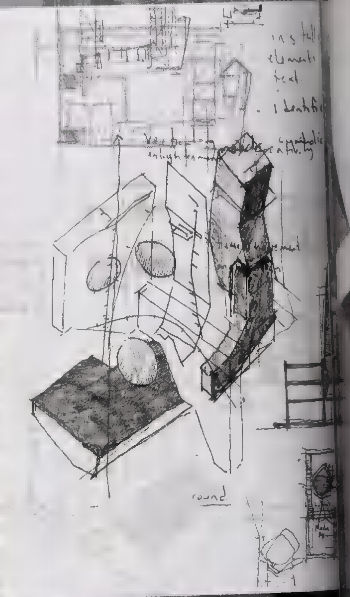
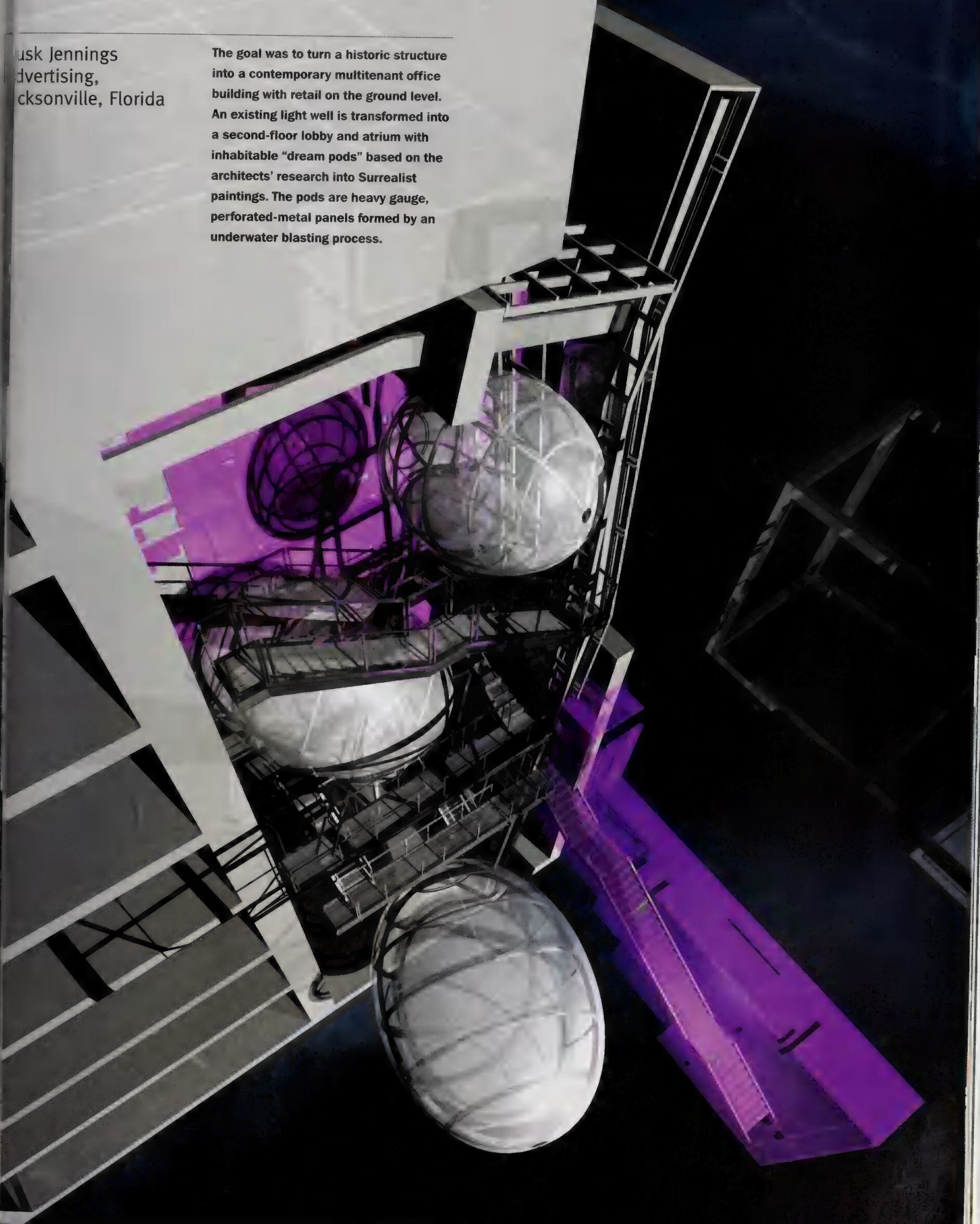
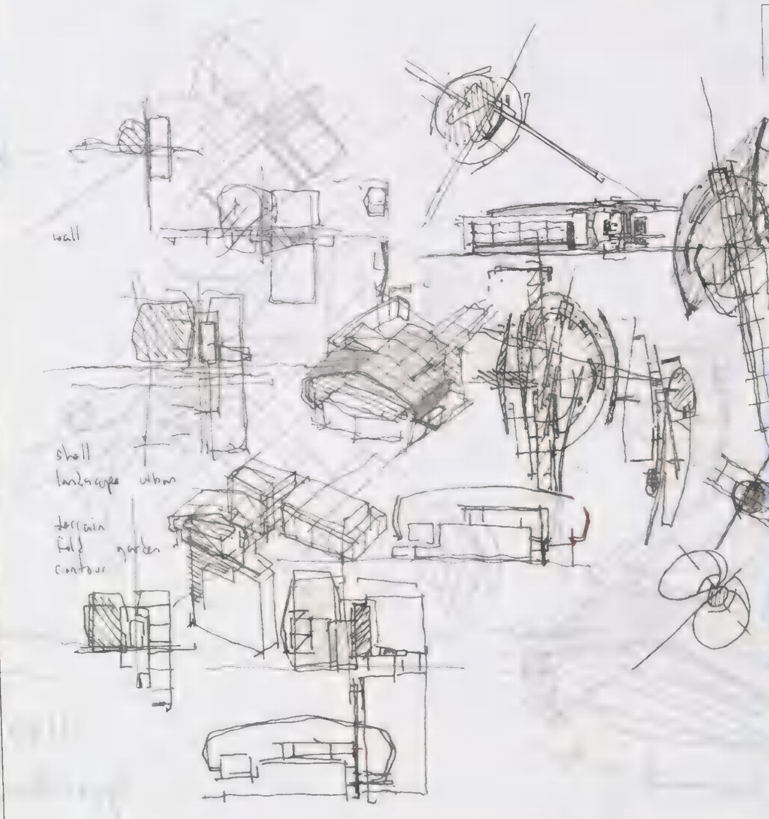


usk Jennings dvertising, cksonville, Florida

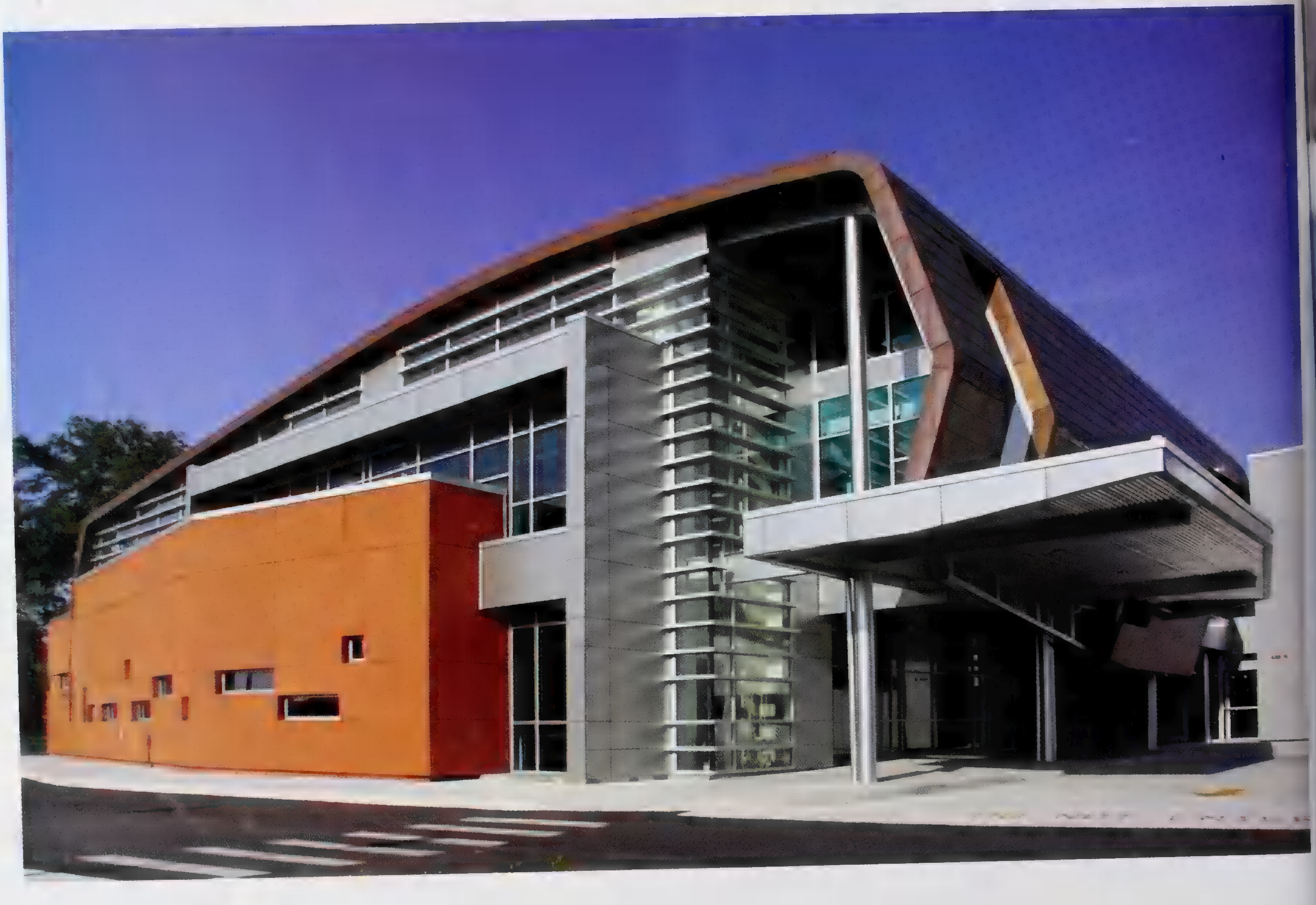
The goal was to turn a historic structure into a contemporary multitenant office building with retail on the ground level. An existing light well is transformed into a second-floor lobby and atrium with inhabitable "dream pods" based on the architects' research into Surrealist paintings. The pods are heavy gauge, perforated-metal panels formed by an underwater blasting process.

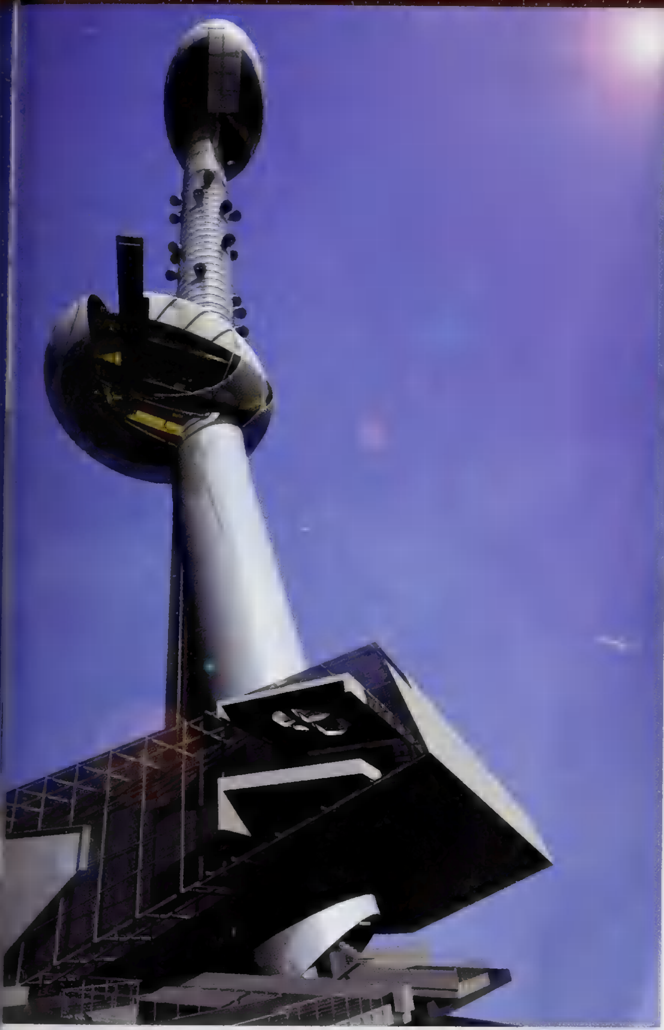




La Villa, Jacksonville, Florida

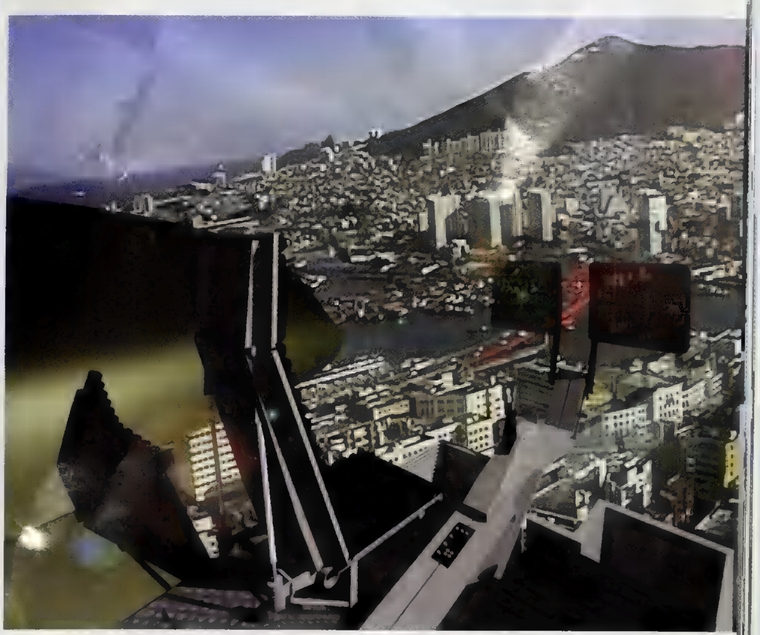
This doctors-office complex is a perfect example of the architects' ability to reconcile beauty and budget. Their inventive use of stock materials produced a building that cost only $50 per square foot. Rather than spreading the design dollars evenly across the project, they prioritized and then established a few defining design moments, while simplifying other parts of the building.





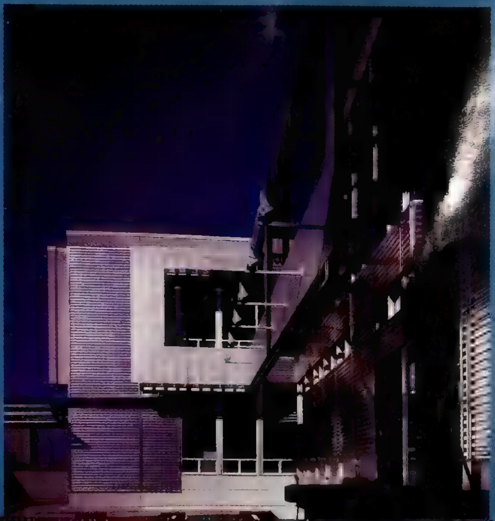
Busan Observation Tower, Busan, Korea

Busan sponsored a competition to revitalize its park district with an icon symbolic of its investment in technology and education. Besides an observation deck on top, Plexus r+d projected 20 pods off the tower neck, each one with a seat, a joystick, and a "heads up" display borrowed from aviation technology. The observer aims the display at an area below and retrieves information from a database.



Franklins Printing, Atlanta

The architects proposed that the building's form and materials reflect the company's interest in cutting-edge technology and the mechanics of the printing process. Material selection—aluminum glazing, natural concrete, corrugated aluminum panels, metal studs and steel grate—celebrates the potential beauty inherent in industrial and utilitarian products.



JKMM Architects engages context and craft to create sculptural designs

By Clifford A. Pearson

Architect: JKMM Architects
Location: Helsinki, Finland
Date founded: 1997
Design staff: 9
Partners: (left to right) Samuli Miettinen, Juha Mäki-Jyllilä, Teemu Kurkela, Asmo Jaaksi
Education: Miettinen: Tampere University of Technology, 1995;
Mäki-Jyllilä: Tampere University of Technology, 1995;
Kurkela: Columbia College, 1990; Helsinki University of Technology, 1997;
Jaaksi: Tampere University of Technology, 1997
Work history: Miettinen: Paavilainen Architects, 1990–97; Lahdelma Mahlamäki Architects, 1997–99;
Mäki-Jyllilä: 8 studio, 1988–92; Lahdelma Mahlamäki Architects, 1992–99;
Kurkela: Jokela Kareoja Architects, 1990–92; Kurkela Studio, 1994; Söderlund Architects, 1997–99;
Jaaksi: Gullichsen Kairamo Vormala Architects, 1990–99
Key completed projects: Houses Killi and Nalli, Raisio, Finland, 1997; Joensuu University Extension, Aurora I, Joensuu, Finland (2002); Leipuri Day Care Center, Helsinki (2002)
Key current projects: Viikki Center, Helsinki, 2004; Meri-Matti School, Espoo, Finland, 2005; Joensuu University Extension, Aurora II, Joensuu, 2006; Turku Central Library, Turku, Finland, 2006; ARMI Center, Helsinki, 2006
Web site: www.jkmm.fi

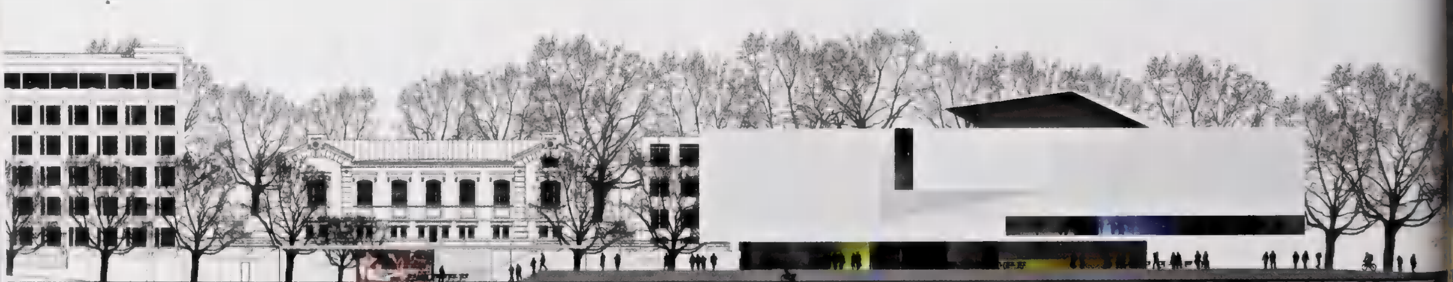
Winning design competitions and creating great buildings are two different things, admits Teemu Kurkela, the "K" of JKMM Architects in Helsinki. Having racked up an impressive record of high-profile competition victories in Finland, Kurkela and his three partners now aim to prove they can deliver high-quality architecture. "The finished building is what counts," he says. While he and his partners talk much about architecture as sculpture, they also state, "Architects must be craftsmen. Buildings should not only withstand time but get more beautiful with age."

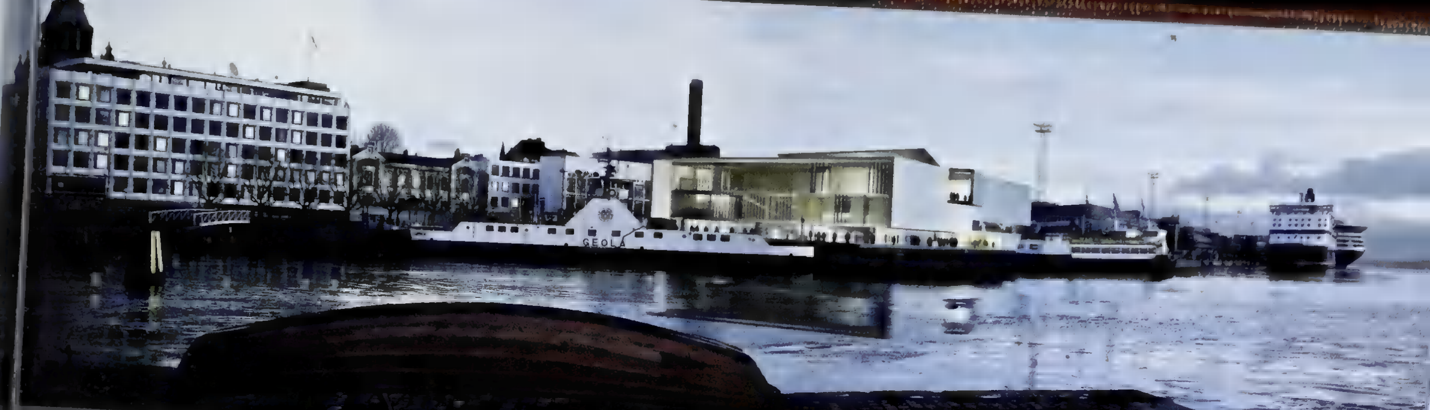
JKMM got going in 1997 when Kurkela, Asmo Jaaksi, Juha Mäki-Jyllilä, and Samuli Miettinen won a competition to design a new central library in Turku. "In large competitions, you need to come up with a strong, simple concept that immediately makes sense," advises Kurkela. "Sometimes you're faced with conflicting demands in the program, so you need to figure out which are the really important elements."

Before landing the Turku library commission, the four architects had crossed paths periodically at various firms in Helsinki, and three of them had gone to the same architecture school in Tampere. "It's a small circle of architects in Finland," says Kurkela. As a result, "there's a basic grammar of architecture that's shared" in Finland, he explains. While such a situation can create harmony in the built environment, it can also be stifling. "We try to break away from it," states Kurkela, "by being more sculptural than other architects and by using contrasts in textures."

After winning three invited competitions in 2000 (for a day-care center in a suburb of Helsinki, a new town center in Viikki, and a set of university buildings in eastern Finland), JKMM hit the jackpot again in 2001, taking first prize in one of the country's most talked-about competitions—for a new information center for architecture, building technology, and design on a prime site right on Helsinki's harbor.

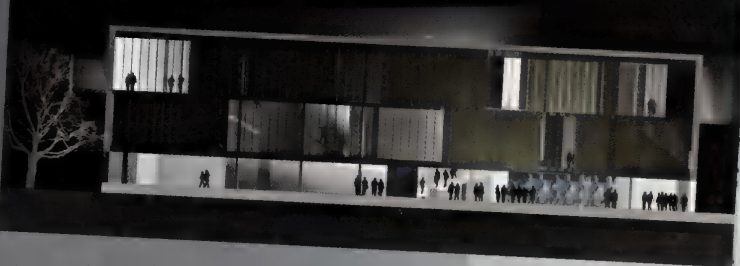
Asked about Aalto's legacy in Finland, Kurkela says his generation is the first to have had no personal contact with the master, so no one is consciously rebelling against or carrying on the ways of the old man. "But Aalto is in the water here, he's all around us." His ongoing influence can be seen in JKMM's concern for making buildings that grow from their contexts and come alive when people enter them. The firm's partners, though, make an effort to broaden their horizons, taking a trip each year to look at architecture. Two years ago, they went to Portugal to see Siza's work, and last year they traveled to Switzerland to check out wooden structures (both old and new). When some of JKMM's larger commissions are completed in the next few years, the firm may find itself in a different position: hosting young architects who want to see its work. ■

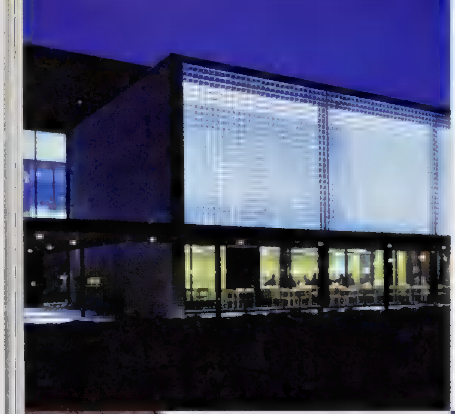




ARMI Center,
Helsinki, Finland

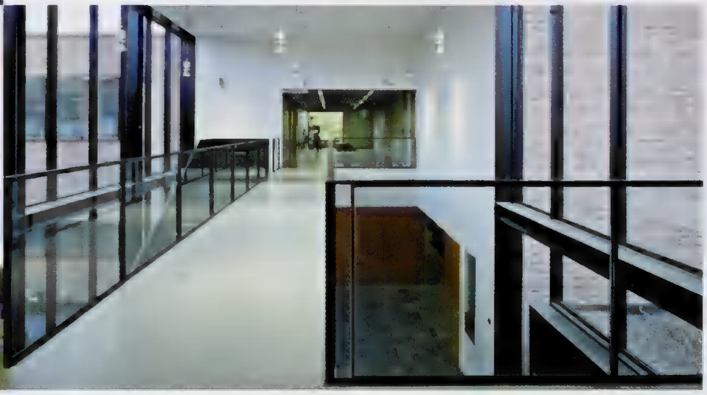
This project will bring together offices for Finland's national organizations in the fields of architecture, building technology, and design, while also providing exhibition space, a restaurant, shops, and an auditorium. Set at the edge of downtown on the harbor, the building presents a timeless, stone-clad facade to the water and a more open elevation and public plaza facing the city.





Joensuu University, Joensuu, Finland

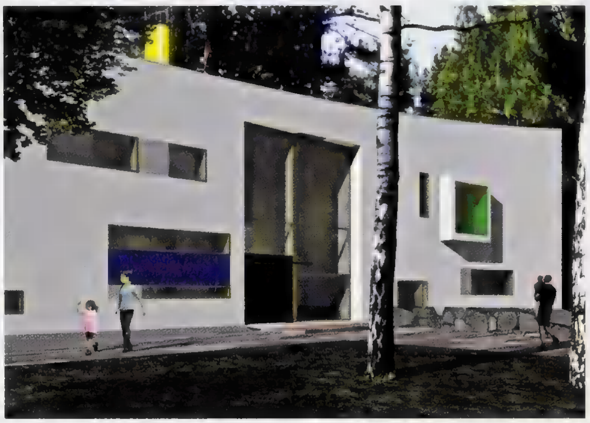
JKMM designed two sets of additions to a campus in eastern Finland begun in the 1970s. The first phase, Aurora I, was completed this past August, while the second phase will be done by 2006. The project adapts the existing redbrick architecture by featuring glass-block pavilions with courtyards in between. Aurora I includes offices, lecture rooms, a restaurant, and a student union sauna.

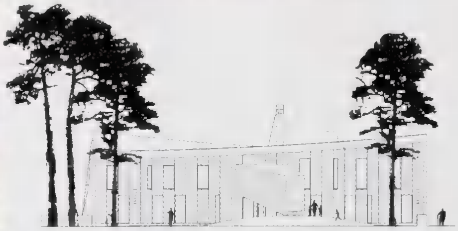


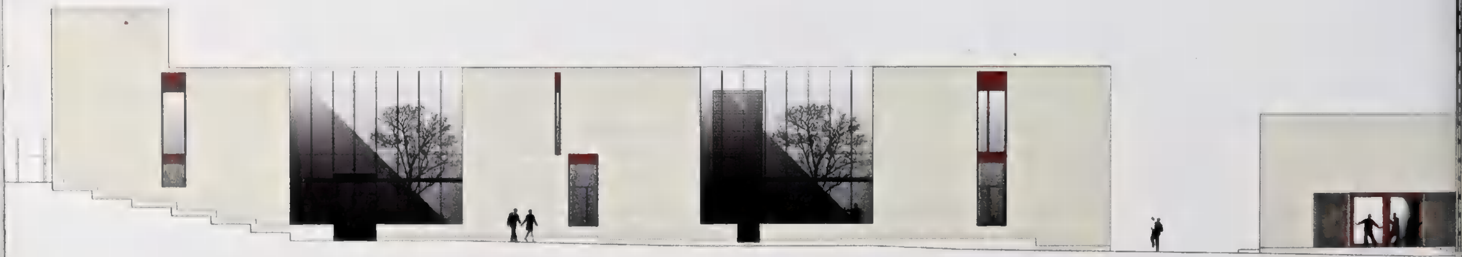
PHOTOGRAPHY: © ARNO DE LA CHAPELLE

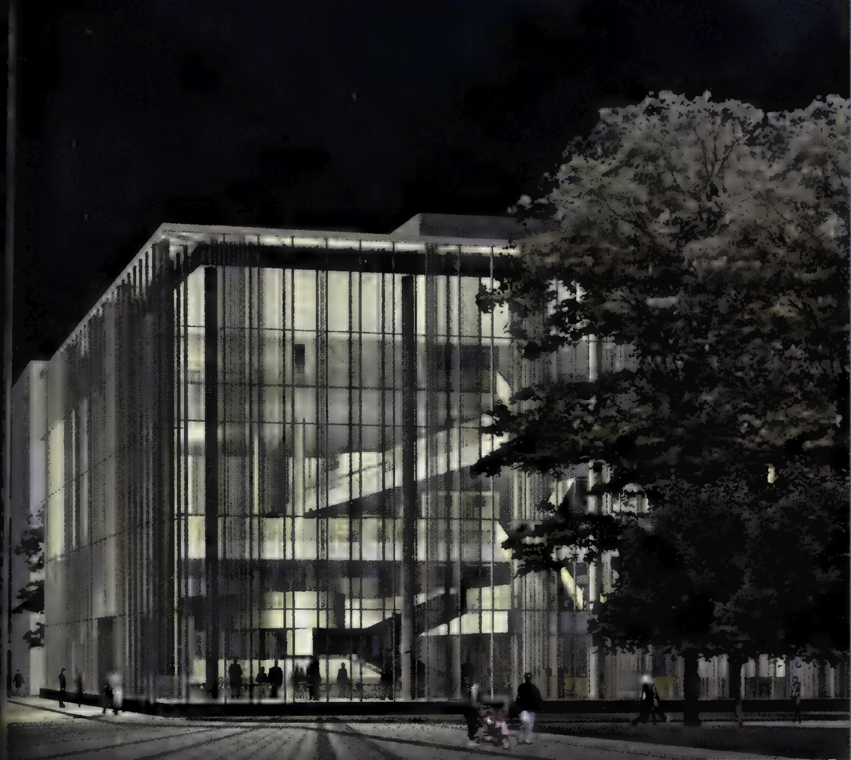
Leipuri Daycare Center, Helsinki, Finland

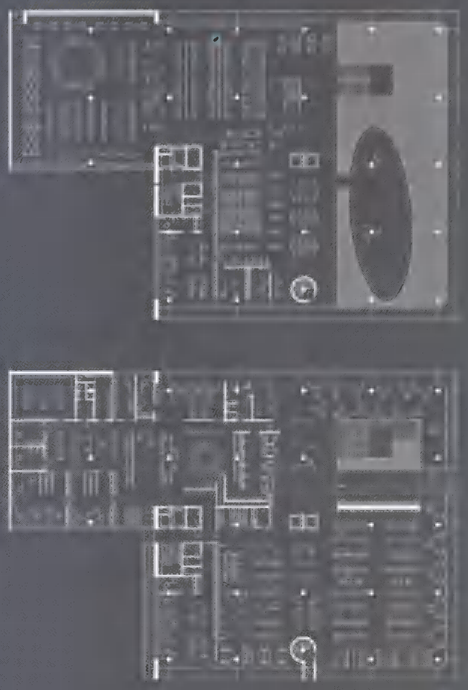
A curving entrance facade and projecting elements such as a window, colorful chimney, and a noselike ramp give this building a sculptural quality that seems both reassuringly solid and playful at the same time. The architects gave different personalities to the major facades, using plaster on one side and wood on another. The project was set to be completed by the end of 2002.

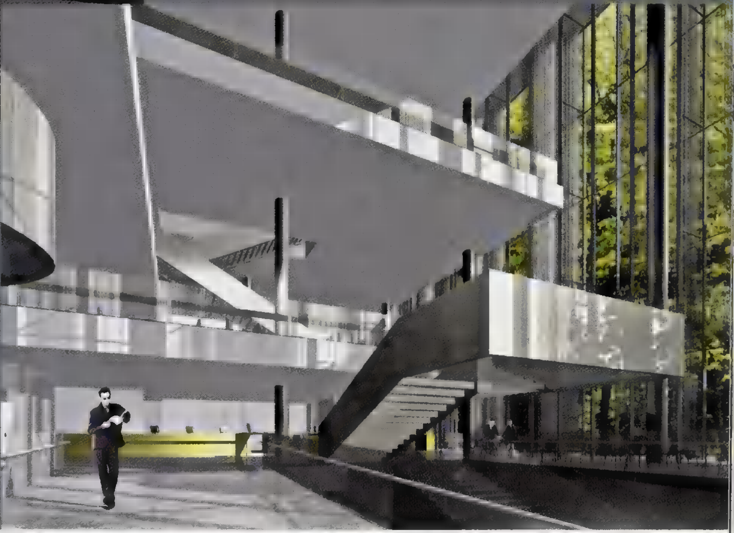










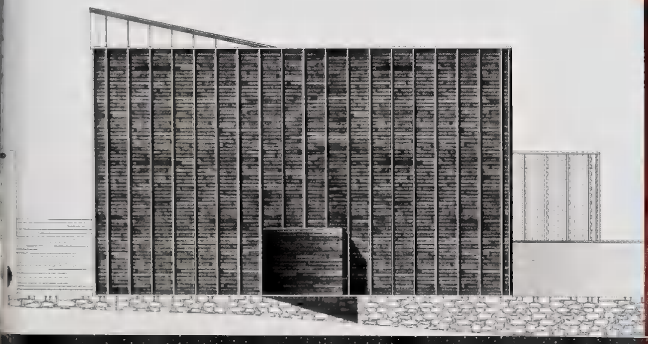


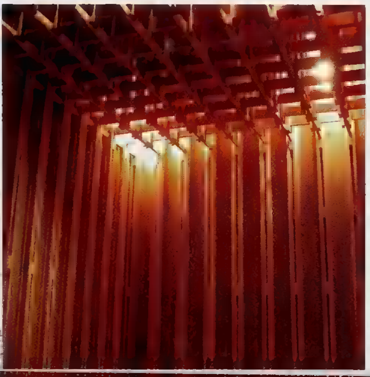
rku Central Library, rku, Finland

Set in Finland's second-largest city, with a 19th-century library across the street and a medieval cathedral across the river, this glass-walled project will offer generous views from every floor. Library departments will be located on platforms stacked on top of each other and pulled back from the glass envelope. Each platform will function as a self-sufficient unit with its own stacks and staff.

Viikki Center, Helsinki, Finland

A new town center for an ecologically designed suburb of Helsinki, this project features a series of public and commercial buildings, including a health center, a youth center, a center for the elderly, and stores. The focal point of the complex is a wood-frame church, clad with gray shingles (left). The buildings are arranged in a linear plan with courtyards set between.





3SIX0 takes a brainy, multidisciplinary approach to the realm of design

By William Weathersby, Jr.

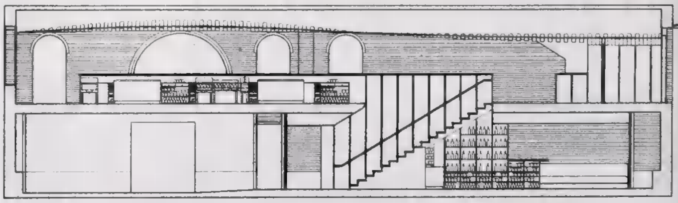
Architect: 3SIX0
Location: Providence
Date founded: 1995
Number of design staff: 5
Partners: Chris Bardt (right), Kyna Leski
Education: Bardt: Harvard Graduate School of Design, M.Arch., 1988; Rhode Island School of Design, B.Arch., B.F.A., 1983; Leski: Harvard Graduate School of Design, M.Arch., 1988; Cooper Union, B.Arch., 1985
Work History: Bardt: Kohn Pedersen Fox, 1985–86; Polshek and Partners, 1983–85; Leski: Eisenman/Robertson, 1985–86; Skidmore, Owings & Merrill, 1984–85
Key completed projects: 33 restaurant and lounge, Boston, 2002; Greco House, Charlestown, R.I., 1997; H20 Furniture commission, Bangkok, Thailand, 1997; Sun Box, Providence, 1995
Key current projects: Goldberg Residence, Martha's Vineyard, Mass., 2003; Lumiere Salon, Providence, 2003; Private Residence, Wakefield, R.I., 2004; Shepherd of the Valley Church, Hope, R.I., 2004

At first glance, the name 3SIX0 might seem a bit cryptic. But after further examination, the moniker works well on several levels. Straightforwardly, *three-six-oh* are the last three digits of the studio's phone number, all the prompting you need to distinguish the company in the local telecommunications exchange of Providence, Rhode Island. On a metaphorical and, indeed, philosophical level, *three-six-oh* more closely represents 360 degrees, the range of design diversity within the reach of this well-rounded architecture and design firm. Founded by partners Chris Bardt and Kyna Leski, who both teach architecture at the Rhode Island School of Design (RISD), 3SIX0 pursues work in academic research, as well as the real-world realms of environmental, commercial, residential, and furniture design.

Bardt and Leski met as students at Harvard's Graduate School of Design. Together they have evolved a compatible design approach that grows out of their development as college teachers, mentors, and administrators, they say. They have had a hand in shaping the architecture program at RISD since arriving there in the late 1980s. Bardt has taught studio, drawing, history, and thesis courses, and for several years coordinated first-year curriculum. Leski, meanwhile, has focused on forming the first-semester core design pedagogy, and for four years ran a course over the winter term in Matera, Italy.

"My work and teaching are dedicated to a search for and through physicality, its deep, mysterious thickness" Bardt says. "What I value the most about working with the physical is the capacity to inspire and take us into the place of architecture wherein lies that paradoxical dense space, structured by thought itself." With studies in sociology and pure and applied science in addition to his architecture training, Bardt has pursued research on early Modern architectural works lost behind the Iron Curtain, and a study of the sun and its trajectories.

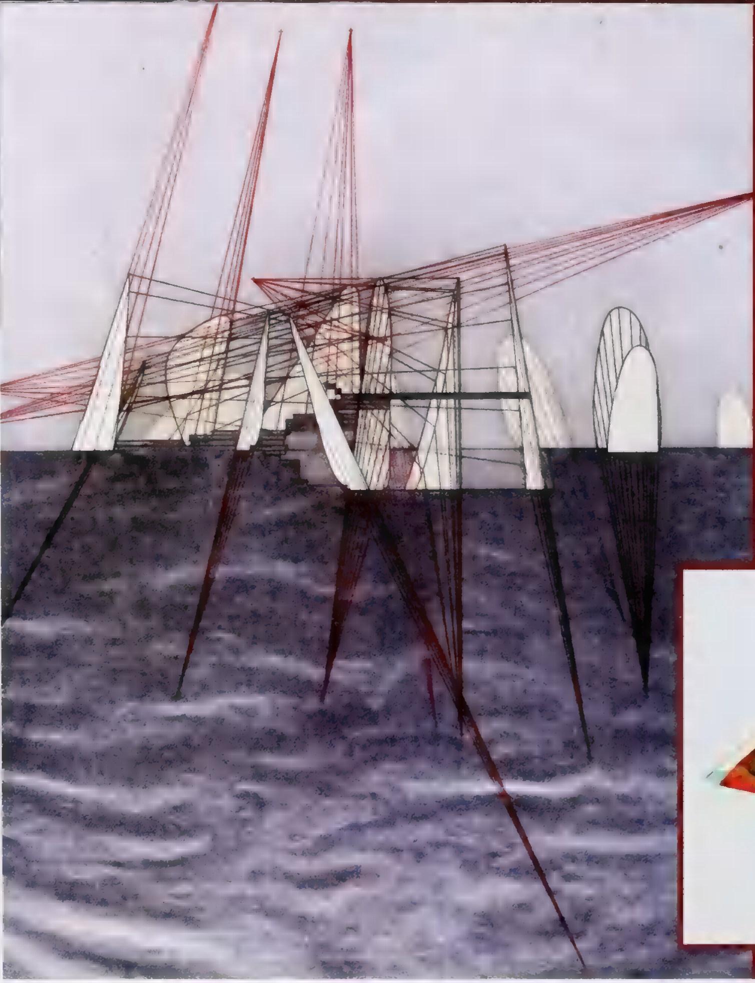
"The same values and practices that I uphold in teaching have been seamlessly incorporated into my ongoing work and practice," Leski says. The daughter of architect and painter Tadeusz Leski, she claims indebtedness to many former teachers—and academic role models—among them Bernard Tschumi, Tod Williams, Ric Scofidio, Elizabeth Diller, Stephen Jay Gould, and John Hejduk. Working in many media and on projects of varied scales, Leski was one of 13 international designers invited to turn a wooden bowl for Drefox in Vienna, won a recent grant for a glass and steel bench, and has received residential design honors in Japan. With Bardt, Leski is collaborating on houses, as well as an art and healing center for dancers anchored on the spectacular coastal cliffs of Martha's Vineyard. Questions? Dial 3SIX0. ■



Sectional view of 33 restaurant.

33, Boston

A restaurant and lounge named for its number on Stanhope Street, 33 is an exploration of geometry and light. A central stair connects the ground-floor dining room to the lounge, bathrooms, and kitchen on the lower level. The undulating stair walls continue through the space in both plan and section, becoming the walls of the bars on both levels. LED-lit walls appear sculptural.

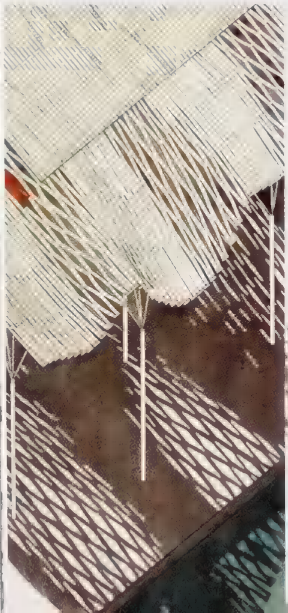


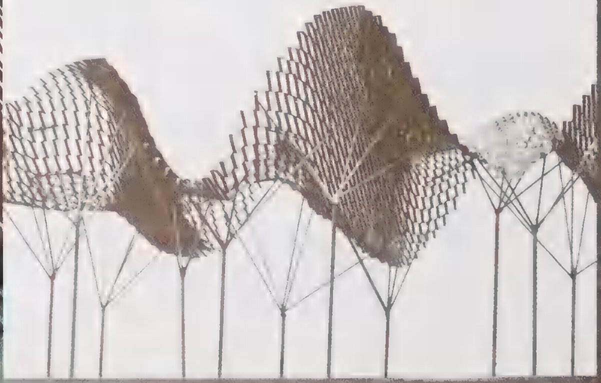
Dream House

The design of this project began with a study of the relational geometry of a moving point (a person) to fixed elements (walls, floors, and ceilings). The architects shaped the three-dimensional forms of the house by tracing projections of light taken at critical points along the path through the project.

Sun Shelter

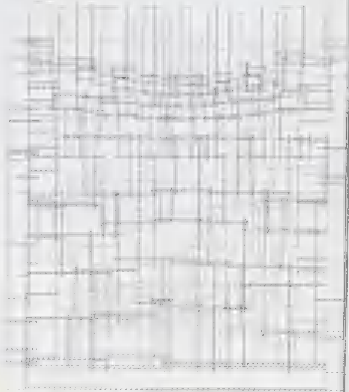
A design for a Manhattan sun shelter won third prize in a competition sponsored by the New York chapter of the AIA and the Van Alen Institute. The site is an 800-by-100-foot-wide recreational pier on the West Side. The structure features a roof of plate-steel modules variably bent and expanded depending on the degree of shading required. Each day, the shelter eclipses the sun at noon.

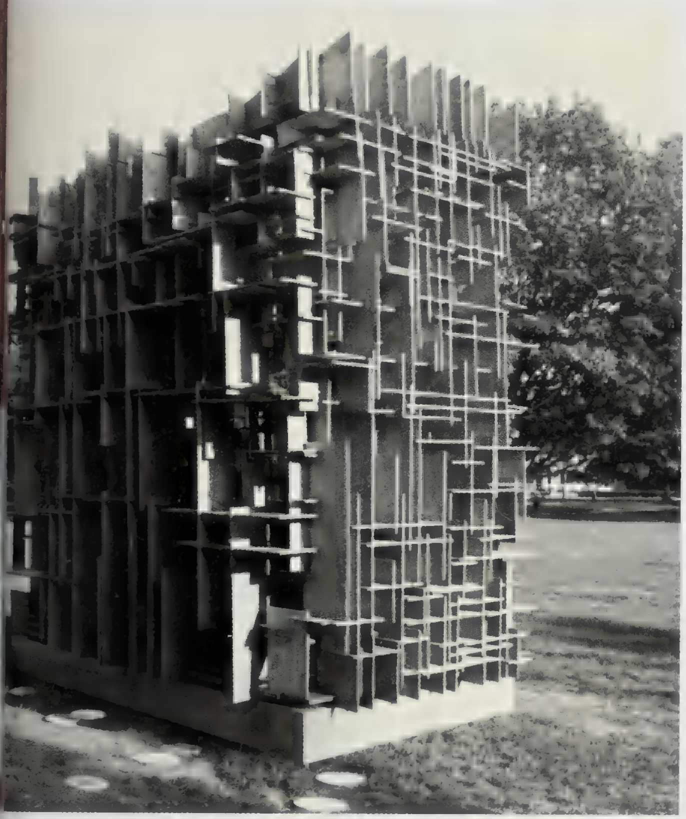


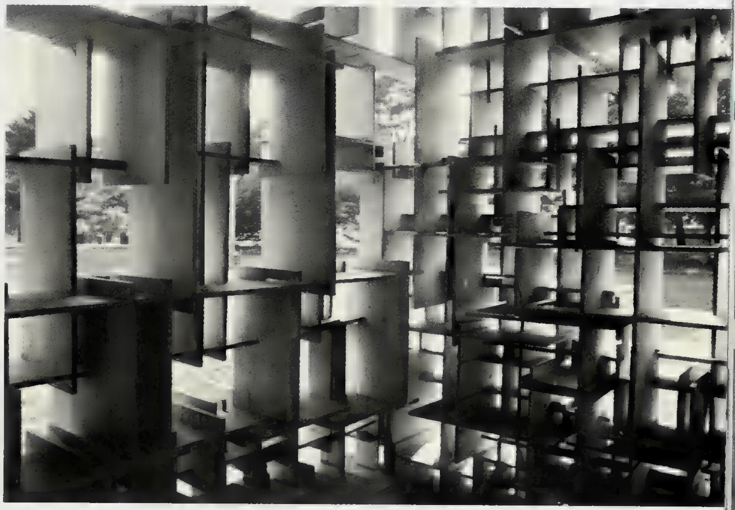


Sun Box, Providence

Part of Bardt's three-year study of the sun and its trajectories, the Sun Box was expanded to civic scale after he received a grant from the Rhode Island Council on the Arts. A kind of inverse sun dial, the structure casts spots of light instead of shadow. Plaques marking time and day allow visitors to experience the passage of light along the facades in addition to the interior.

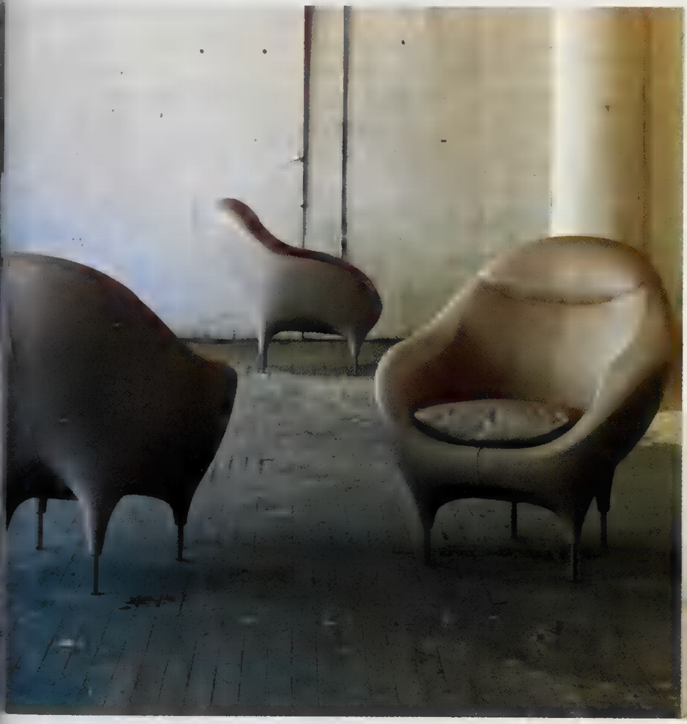


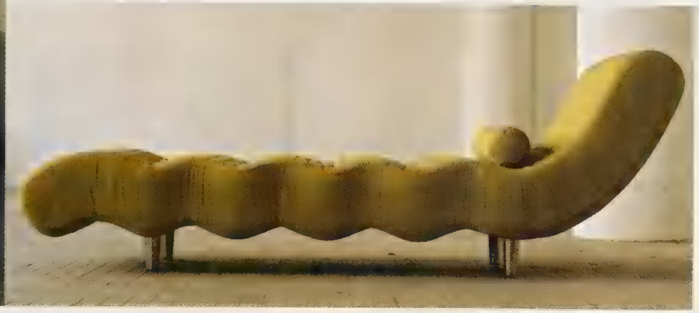




H2O Furniture, Bangkok, Thailand

Commissioned by a family in Thailand, the furniture pieces were "conceived to be inhabitants of this tanklike house," Leski says, "as if they lived in different aquatic states." Bangkok is a city of extreme water conditions, she explains, a city of canals with a water table close to the ground's surface. The house is like a tank that reflects the environment; a canal with a glass floor runs along one side. The palette of finishes was inspired by the landscape.





Sahel Al-Hiyari sculpts space with strong geometry and modulated light

By Kevin Lerner

Architect: Sahel Al-Hiyari
Location: Amman, Jordan
Date founded: 1997
Design staff: 2
Partners: Sahel Al-Hiyari
Education: University of Venice, Doctorate of Research in Architectural Composition, 1995; Harvard GSD, M.Arch., 1990; Rhode Island School of Design, B.F.A. and B.Arch., 1988
Work history: Jaffar Tukan and Partners, 1996–97; Dar El Handasah, Shair and Partners, 1990–91; Machado Silvetti Associates, 1986
Key completed projects: Psychologist's Clinic, Amman, 2001; Jordanian Pavilion for Expo 2000, Hanover, Germany (with Akram Abuhamdan, Nadia Dajani, and Bisher Zreikat), 2000; Bilbeisi Residence, Shuneh, Jordan, 1998
Key current projects: Tsi Spa, Amman (unbuilt), 2001; Coral Beach Hotel, Aqaba, Jordan (competition), 2003; Dahabi Residence, interior design, 2003; Nilaya furniture showroom, 2003; Dabuq House, 2003

Very rarely do Pritzker Prize winners call younger architects and offer to take the them under their wing. But Álvaro Siza, the Portuguese Pritzker laureate, chose to work for a year with Sahel Al-Hiyari, who runs his five-year-old office out of Amman, Jordan. Siza and Al-Hiyari are participating in the Rolex Mentor and Protégé Arts Initiative, which pairs emerging artists with seasoned veterans for a year of tutelage. A nominating panel that includes Frank Gehry, as well as novelists, theater directors, and ballerinas, among others, chose Siza as this year's mentor in the visual arts category. Siza, in turn, chose Al-Hiyari to be his protégé from a group of three finalists.

Al-Hiyari grew up in Jordan unsure of whether to study painting or architecture, and eventually attended the Rhode Island School of Design, which allowed him to do both. He continued his education at the Harvard Graduate School of Design and at the University of Venice, Italy. After working for architects in the United States, Italy, Jordan, and Egypt, he opened his own office in Amman in 1997. "Until a month ago," Al-Hiyari said, "there was no design staff working with me, nor did I have any office support. I did everything by myself."

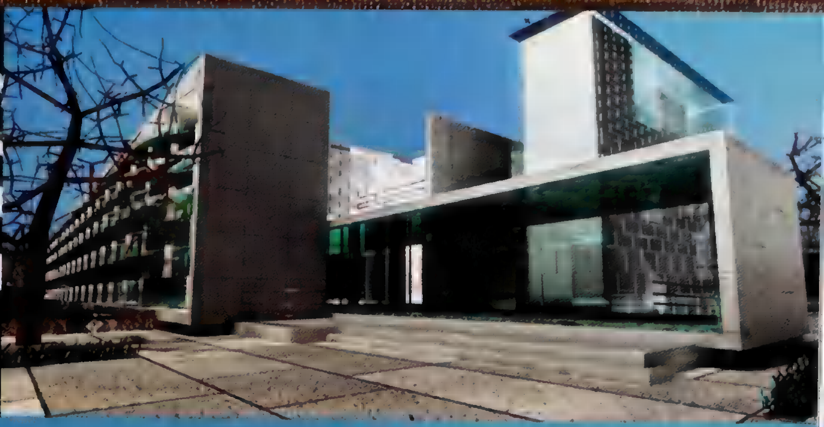
Al-Hiyari sees context and materials as central to his work, and one unorthodox material stands out particularly: "To me, light is a building material as critical as any other," he said. "It is the medium through which spaces and forms are revealed. Under different lighting conditions, the same tangible structures assume very different characters."

The control of light plays a large role in many of Al-Hiyari's designs. Sliding panels, translucent glass, and brise-soleils feature prominently in the work, but for Al-Hiyari, these are practical choices as much as aesthetic ones. "In Jordan, light is abundant, and often excessive for comfort," he said. "Traditional architecture of the region has therefore always concerned itself greatly with modulating light, if for no other reason than to make buildings livable and comfortable. The lessons of these traditions are still valid today." Al-Hiyari keeps both tradition and technology in mind. In one project, the Tsi Spa, he said, "I sought to create a building-within-a-building, integrating the historic model of desert castles with the modern idea of the brise-soleil."

As a Western-trained architect in the Middle East, Al-Hiyari does not see a conflict between the two traditions of design. "Architecture everywhere responds to the nature of the site, the culture, and the needs of the people who will live and work in it," he said. "Good solutions found in various parts of the world are often reflections of these needs—some local, some universal."

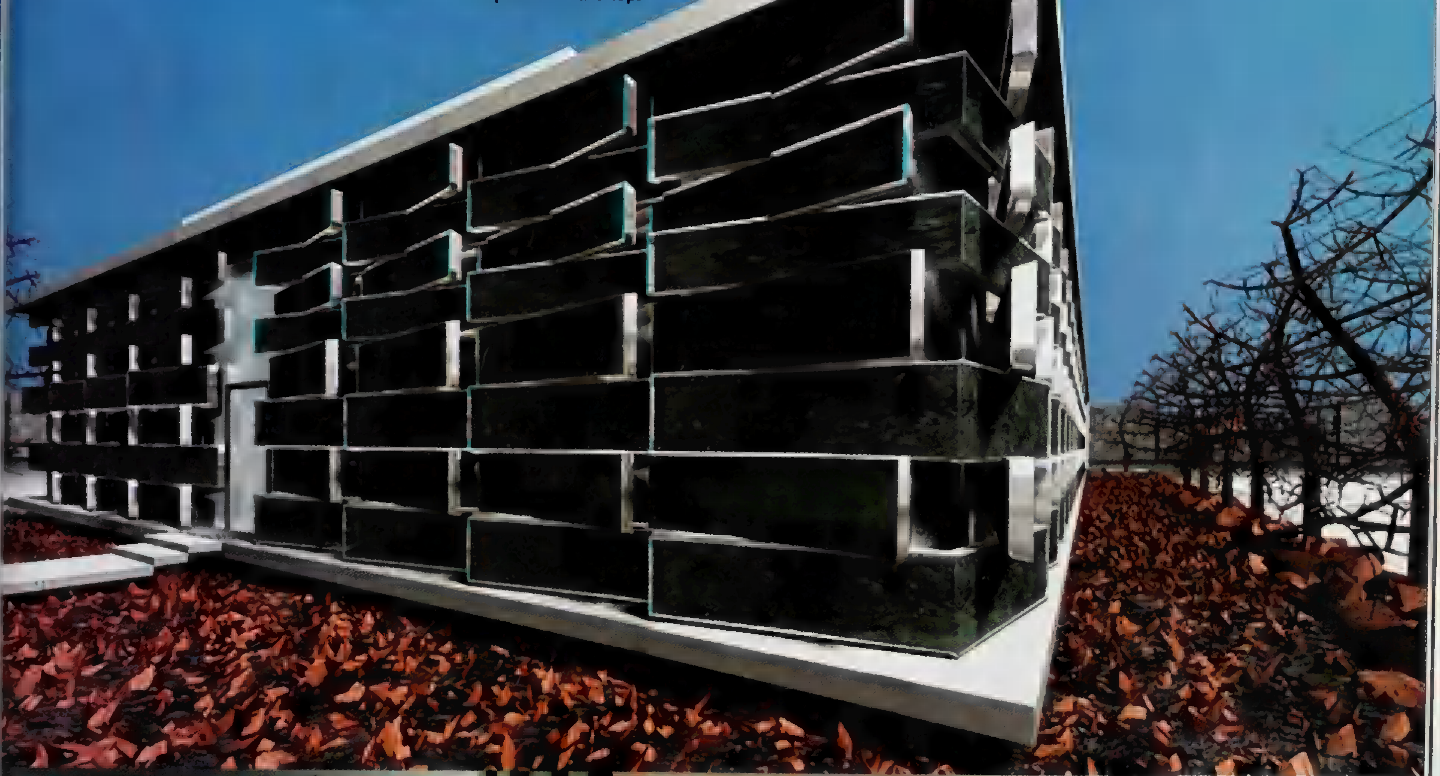
Al-Hiyari is honored to have the opportunity to return to the West to work with Siza, whom he sees as "a master of sculpting space with light." Al-Hiyari has had the opportunity to visit several of Siza's works with him, and Siza has offered comments on some of Al-Hiyari's current projects. "His feedback on my works has been very thought provoking and constructive," Al-Hiyari said. "It is carried out with a clarity and simplicity that only a person with a great mind is capable of." ■

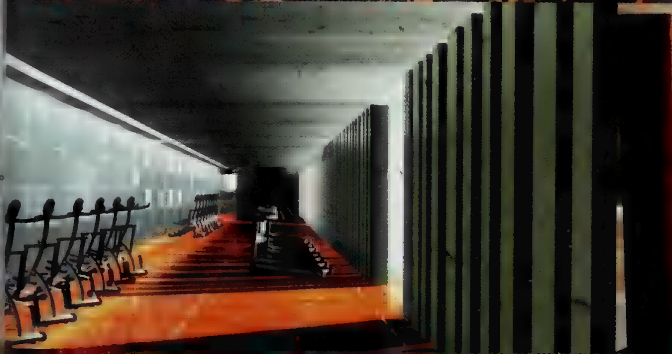
Al-Hiyari worked with a team of architects to design the Jordanian Pavilion for Expo 2000.



Tsi Spa, Amman, Jordan

Interlocking green marble panels filter the glare of the sun into a softer, diffused light, which is intended to enhance the therapeutic atmosphere of this spa in suburban Amman. Each of the eight autonomous therapy spaces features a private water garden. The circulation core of the spa is wrapped with glass that varies from opaque near the bottom to transparent at the top.



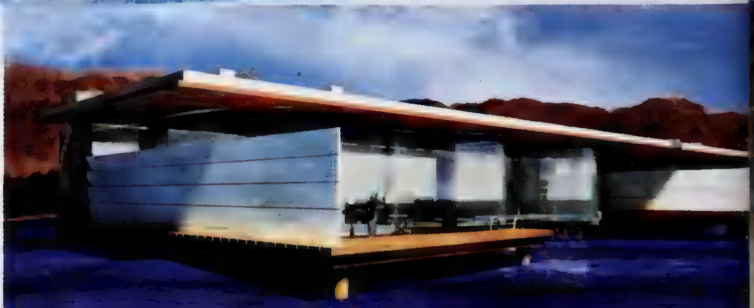


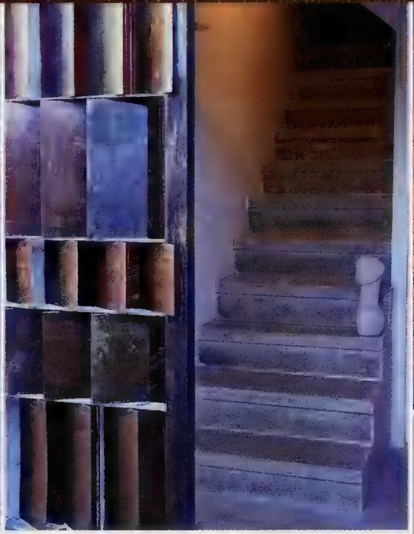
Bilbeisi Residence, Shuneh, Jordan

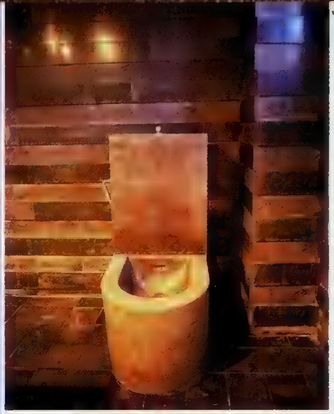
This house sits in the Jordan River valley, which is a popular site for winter retreats. The house is derived from the traditional *hakoora*, a residential type with a prominent courtyard or garden, though the massing and plan are atypical. Interior and exterior spaces fuse into one continuous structure. The upper floor's outdoor living room shares a roofline with the rest of the house.

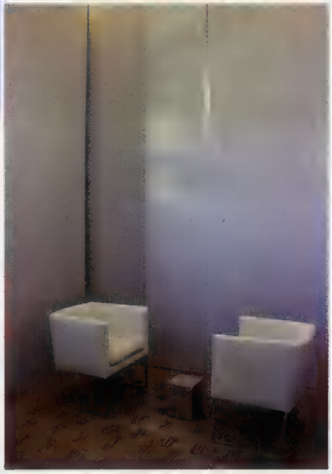
Coral Beach Hotel, Aqaba, Jordan

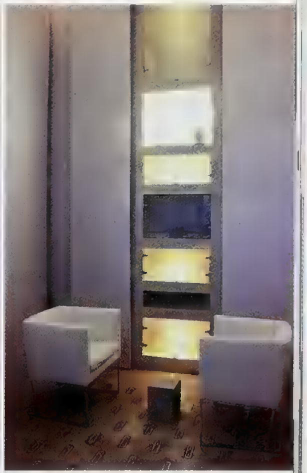
The main facade of this sprawling resort is clad in glass and punctuated by polycarbonate panels. Every guest room faces the Gulf of Aqaba. Guests can individually control the opacity of glass panels for both privacy and views. Six floating chalets were sited so as to hide views of an industrial port. The complex also contains two restaurants, a bar, a casino, and a ballroom.





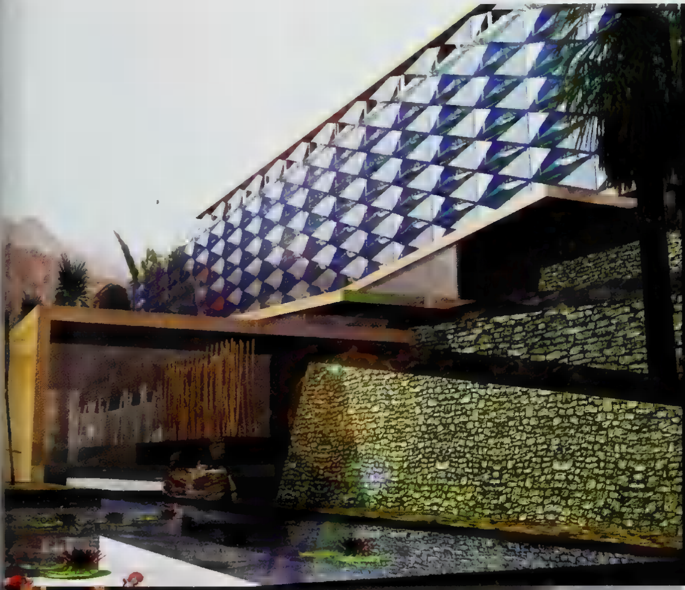


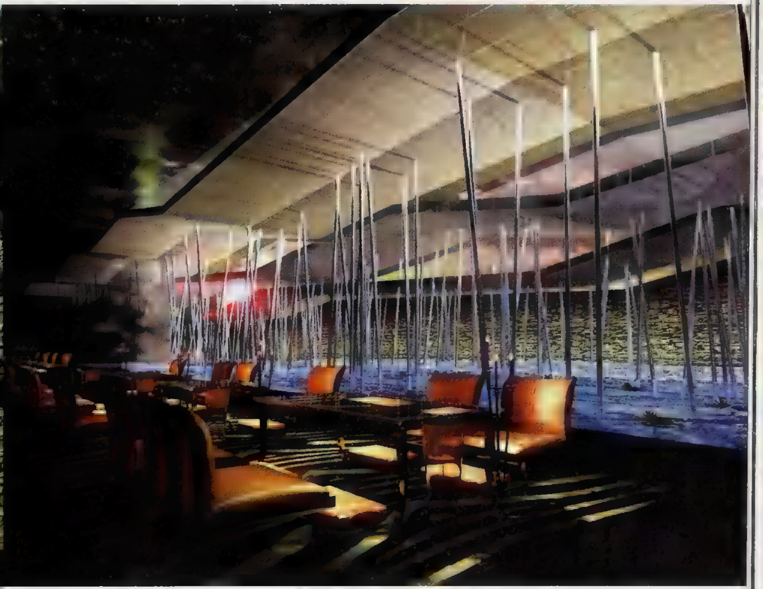




Psychologist's Clinic, Amman, Jordan

An internal "skin" of sliding panels permits the client, a clinical psychologist, to adjust the atmosphere of the space, allowing for lighting conditions that suit the comfort of each patient. The project renovated a 1950s house within a strict budget. Al-Hiyari designed kitchen and bathroom fixtures, which were then carved out of local stone, for significantly less than the cost of imported fixtures.





David Adjaye's designs serve as bridges between art and architecture

By James S. Russell, AIA

Architect: Adjaye Associates
Location: North London
Date founded: 2000
Design staff: 28
Principal: David Adjaye
Education: Southbank University, Bachelors of Art, architecture, 1990, 1997; Royal College of Art, Masters of Art, architecture, 1993
Work history: Chassay Architects, 1988–90; David Chipperfield Architects, 1991; Eduardo Souto de Moura Architects, 1991; Adjaye & Russell, 1994–2000
Key completed projects: Studio/home for Chris Ofili, London, 1999; Extension to house, St. John's Wood, 1998; Siefert Penthouse, London, 2001; Elektra House, London, 2001; Studio/gallery/home for Tim Noble and Sue Webster, London, 2002; SHADA Pavilion, London, 2000 (with artist Henna Nadeem)
Key current projects: Idea Store libraries, London; Mediatech (new-media school), Boston; renovated shop spaces for Selfridges department store, London; community center, Shadwell, U.K.

To be dubbed an architect to the stars at age 36 is almost as rare in Great Britain as it is in America. But David Adjaye has earned this status the hard way. He has drawn clients such as actor Ewan McGregor, fashion photographer Juergen Teller, and artist Chris Ofili not with cozy, decorating-magazine-friendly design, but with a stripped-clean yet conceptually rich architecture.

Adjaye's recipe for success includes making the most of good timing and synthesizing a rich body of life experiences. Born in North Africa to Ghanian parents who were diplomats, he spent much of his youth in Cairo, Yemen, and Beirut. In London, the Royal College of Art's small architecture program appealed to him because he could also partake in the college's lively art school. There he met Ofili and others who formed a "bad boy" vanguard that has transformed the British art scene. (Ofili is the artist, as critic Rowan Moore describes him, "who won the Turner Prize with paintings made of elephant dung.")

"Architects resolve issues in architectural terms alone and this terrifies artists," explains Adjaye. "Artists see their work as done in real life and about it. They 'speak' several languages." Adjaye describes his work as "building a bridge between art and architecture," with a conceptually driven practice dedicated to stripping away artifice.

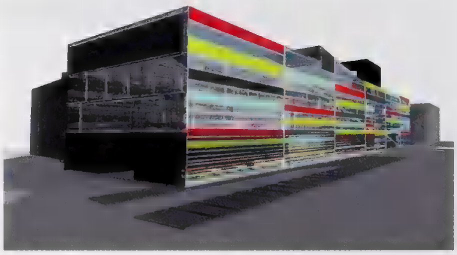
One of the early projects that brought Adjaye and his partner William Russell early fame (they split two years ago) was the conversion of the ground floor of an anonymous dun-brick East London town house into an austere white-box living space for Ofili. Adjaye also added a metal-framed glass cube dining area that pops out on the garden side of the residence, surmounting a glass-block-roofed painting studio.

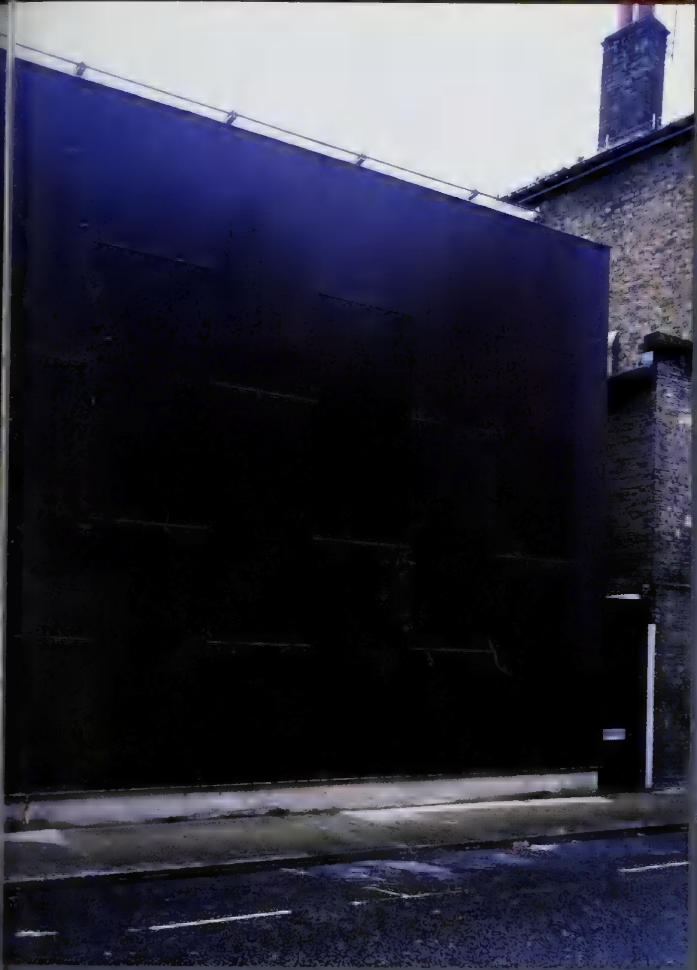
Adjaye's conceptions look immaculate, but they stir together a number of sensibilities and preoccupations. There's a primordial power to the long, low, concrete-framed volume that pushes out of the garden side of a house in St. John's Wood, for example. The design challenges the comfortable Victorian domesticity of its landmark "host." Adjaye shapes perception to make the reflection of a tree in glass extraordinary or to heighten the significance of a carefully considered garden stair—a legacy of time spent studying traditional painting and architecture in Japan.

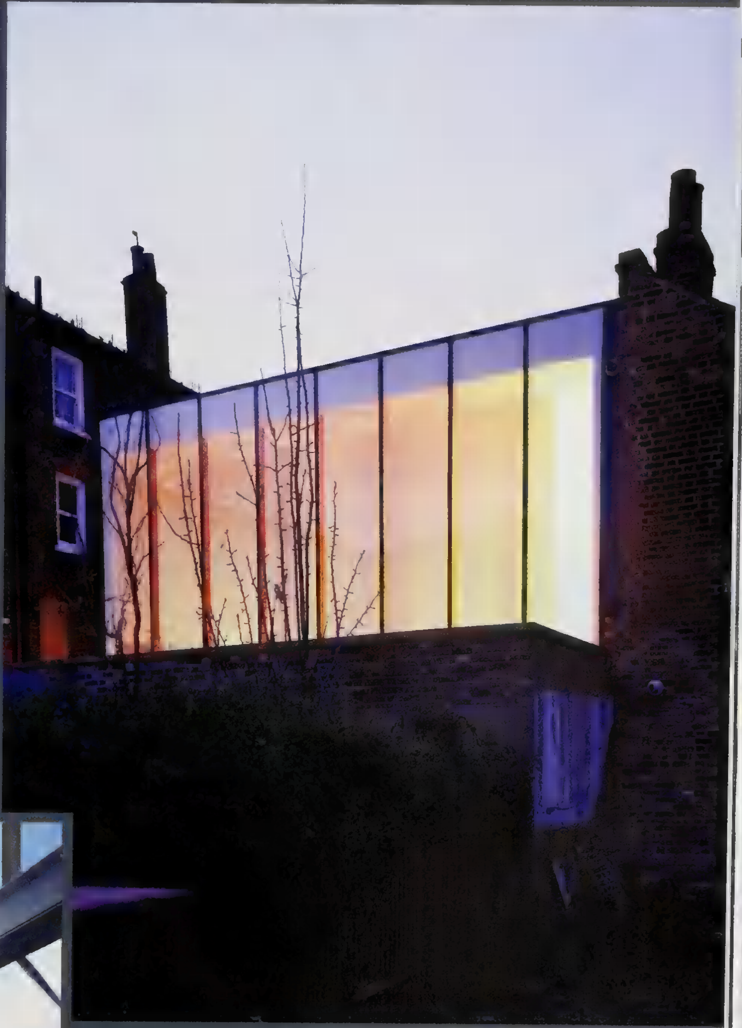
The project that brought Adjaye's practice the greatest attention is a low-budget, live-work space for two artists and their family (opposite). Within a two-story volume, he suspended upper-level sleeping spaces, freeing the open, beautifully lit ground floor to be a studio, a living space, or a gallery. The house's few gestures take on a complexity, he says, that reflects the altered domestic realities of our day.

Adjaye recently received commissions for larger commercial and civic work—projects where the stark power of his early work will be challenged by more complex programs. "Commercial pressures are so severe that it becomes even more important to understand what you are building and why," he says. "You can easily become just a stylist." Is he ready? "I think I'll be happiest working in the civic realm." ■

Mediatech is a new-media school slated for Boston.





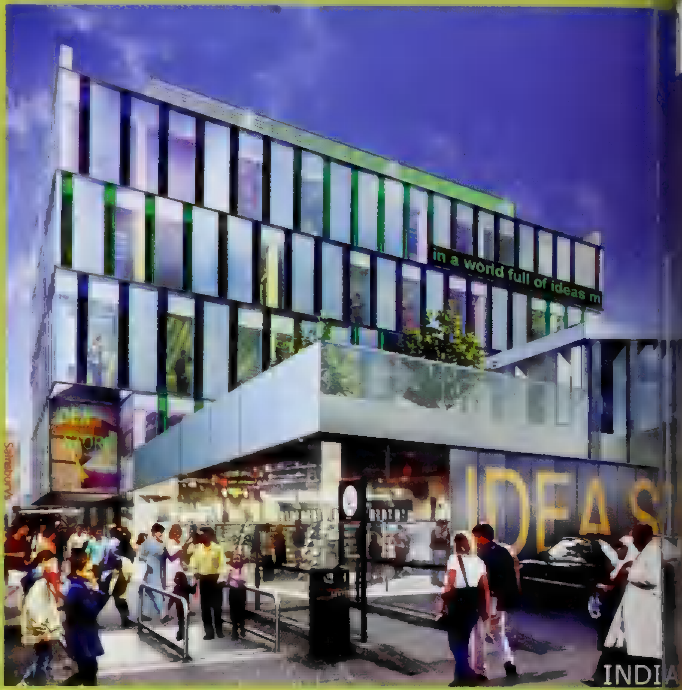


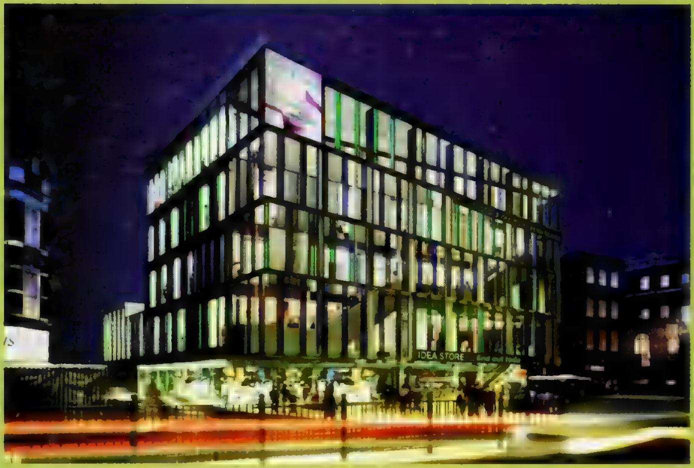
Elektra House, East London

The resin-coated plywood facade (above) of this house/studio/gallery for two artists is Adjaye's most controversial gesture. Instead of windows, a shaft of top-light illuminates the front of the ground floor (below left). On the garden side, a high glass wall brings daylight into the upper-floor bedrooms as well as augmenting illumination provided by a glass room (below right).

Idea Store, London

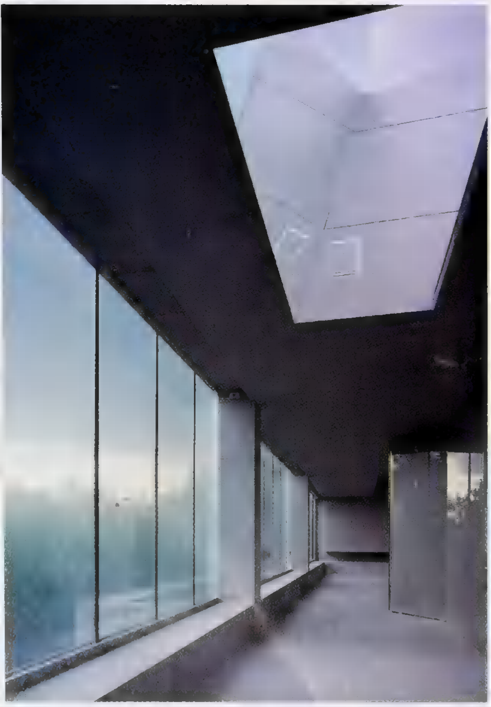
A prototype, the Idea Store reinvents the public library. The alternation of color and transparency makes the structure appealing while advertising the addition of educational programs to traditional library functions. The exterior displays information and includes retail on the ground floor. Inside, an atrium escalator hall unifies the structure. The first two of six "stores" will open in 2004.

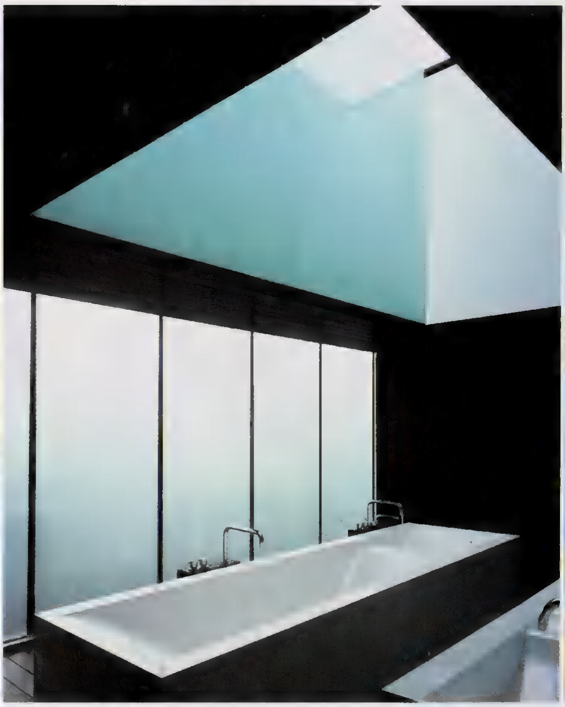


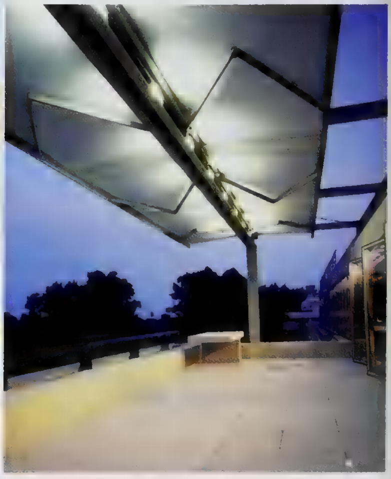


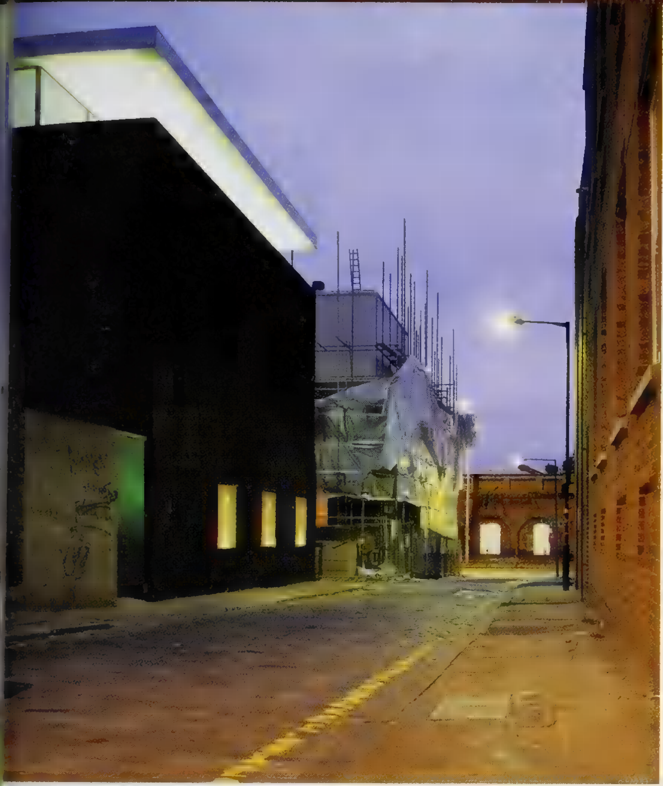
Siefert Penthouse, London

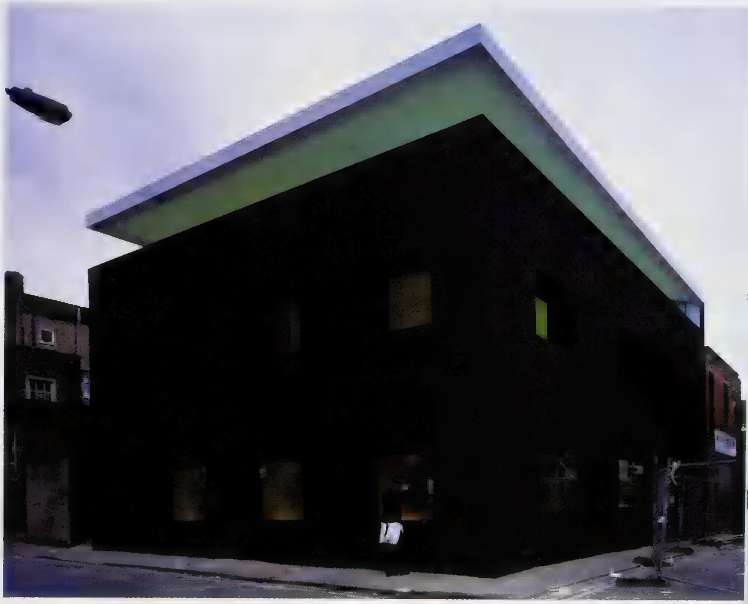
Arguably the most monumental of the firm's projects, the Siefert Penthouse has high-ceilinged spaces punctured by deep light monitors (left) and finished monolithically with slabs of wood, stone, and glass. Just as a pantograph extends a fabric roof over the balcony (below), nearly the entire window wall folds away, sensuously opening the apartment to park breezes.





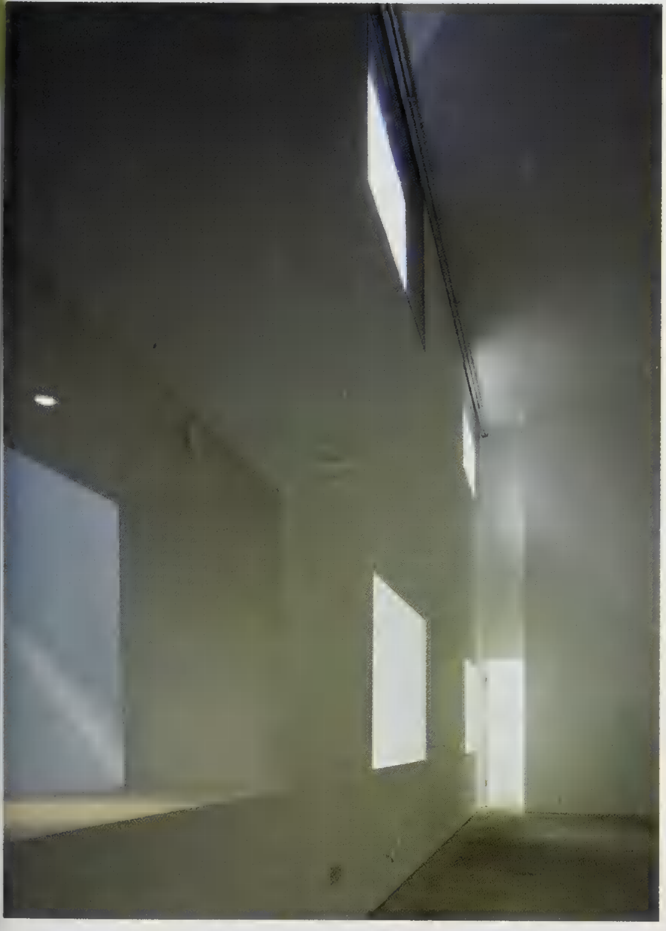


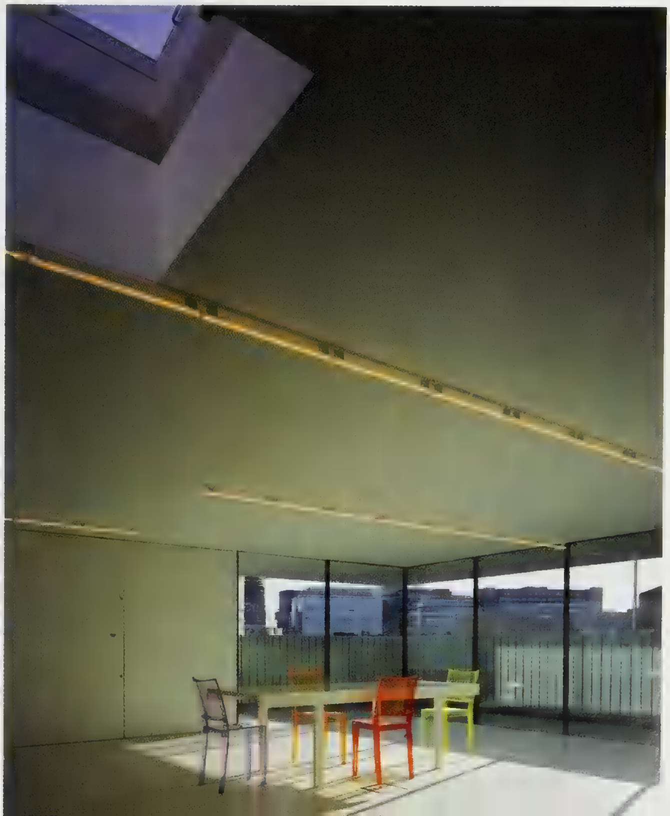


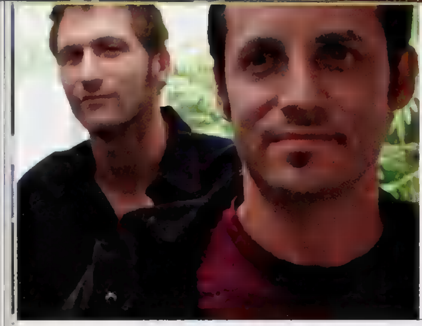


Dirty House, East London

In rebuilding this warehouse for two artists, Tim Noble and Sue Webster, Adjaye Associates created a 20-foot-high ground floor (bottom left) to house the owners' large-scale works. The thick enclosure of the lower floors opens to a pavilionlike upper living level (below). The design, says Adjaye, reconciles the institutional scale of a museum with the intimate scale of a house.







Predock_Frane Architects uses immersion to drive its design methodology

By Charles Linn, FAIA

Architect: Predock_Frane Architects
Location: Los Angeles
Date founded: 1999
Design staff: 5
Partners: John Frane (left), Hadrian Predock
Education: Predock: Harvard GSD, M.Arch, 1993; University of New Mexico, B.A., 1989;
Frane: University of Texas at Austin, B.Arch., 1993
Work history: Predock: Antoine Predock Architect, 1986–90; Eisenman Architects, 1992; Arquitectonica, 1993–94; Mehrdad Yazdani, 1995–97;
Frane: Frank O. Gehry and Associates, 1990–91; Mehrdad Yazdani, 1993–99
Key completed projects: Montecito Residence, Montecito, Calif., 2000; Boelsen Residence, Santa Monica, Calif., 1999; Predock_Frane Studios, Santa Monica, 2001; Center of Gravity Foundation Hall for the Bodhi Mandala Zen Center, Jemez Springs, N. Mex., 2002; Greve Residence, Venice Beach, Calif., 2002
Key current projects: Central California History Museum, Fresno, Calif.; Rinzai Zen Buddhist Retreat, Desert Hot Springs, Calif.; Frisch Residence, Santa Monica Mountains, Calif.; West Residence, Bel Aire, Calif.; Klingenguchi Residence, San Francisco; Atalanta Retreat, Crestone, Colo.; The White Oaks Project, White Oaks, N. Mex.
Web site: www.predockfrane.com

One of the things that brought Hadrian Predock and John Frane together, besides the fact that they were working as senior designers in the same office, was their complementary ideas about the use of space and materials. "There is a similarity about the kind of search we make," says Predock, "even though at times we are working toward the same end in different ways. I tend to be more rooted in the conceptual and philosophical." Frane agrees, saying, "Hadrian's design process is much more rational than mine. Mine tends to be more intuitive, like, 'well, this just feels like the way it should be done.' " When combined, their different approaches produce a very positive sort of give-and-take.

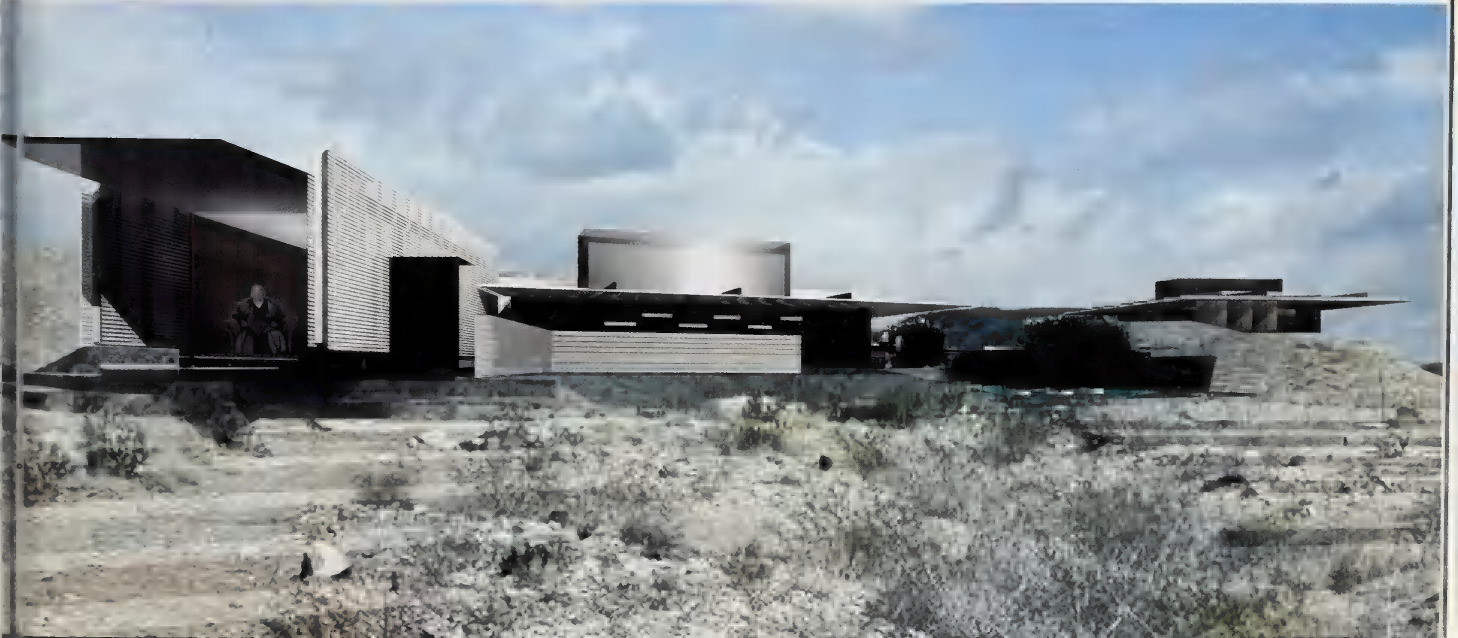
Several years ago, Predock and Frane began moonlighting on small-scale projects and working together on competitions. "The projects were not entirely pro bono," says Frane, "but close." The pair realized that their best shot at getting a large enough project so they could launch a practice would probably come through a competition, so they took this work very seriously. "We're interested in doing buildings," says Predock. "We are not interested in doing competitions that don't lead to construction." Frane concurs. "I don't want to do competitions as intellectual exercises that don't have a manifestation." The partnership's big break came when they won a competition for the Central California History Museum in Fresno, which will begin construction in 2004. "That got us on our feet and forced us to start working on enough projects to sustain a small office."

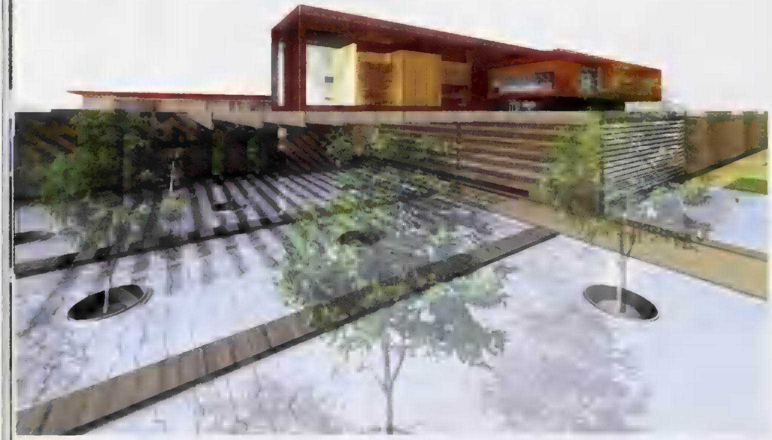
"Immersion" is a key part in the partners' design process. "We are fascinated with the world that surrounds and informs our buildings' sites," says Predock. For the museum, as well as most projects, they started out driving through the region around the site, taking photographs, picking up rock, soil, and plant material samples, learning the nuances of climate and culture. "We develop analogues to a project's context. From that we can distill the ideas that have evolved in a particular place, to inform our architecture," says Frane. "Working through many iterations helps us design to a specific place. Much of the contextualism we see is very superficial, and we work at avoiding that." Predock adds that they want to deemphasize the design of buildings as objects. "Instead, we look upon buildings as 'instruments,' orienting them toward being experiential, phenomenological things. What is important to us is the way a building can affect people in their relationship to the world. This is how a building can become 'instrumental.' "

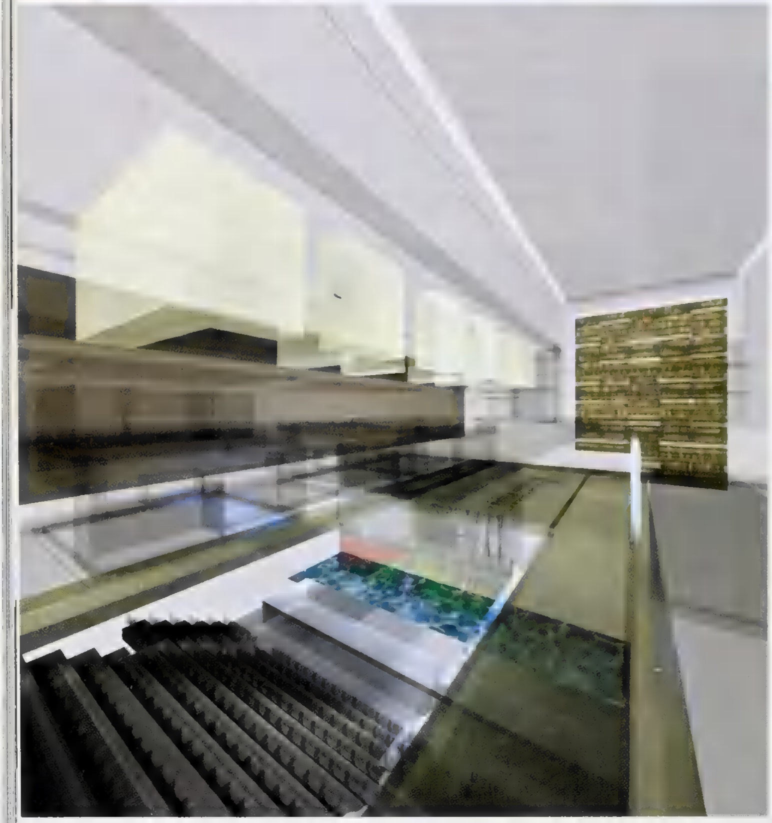
Sooner or later almost every discussion of the work of Predock_Frane gets around to Hadrian's father, architect Antoine Predock. Hadrian says, "The most direct influence that my dad has had on what we do is that initial immersion into the culture of a place at the beginning of a design. But very different things happen when we translate that information into architecture. Clearly, a person has to have confidence about their work and what they're doing on their own, or they're going to be miserable. We're doing our own work, and we have our own momentum going. But John and I are looking forward to collaborating with my father in the future." ■

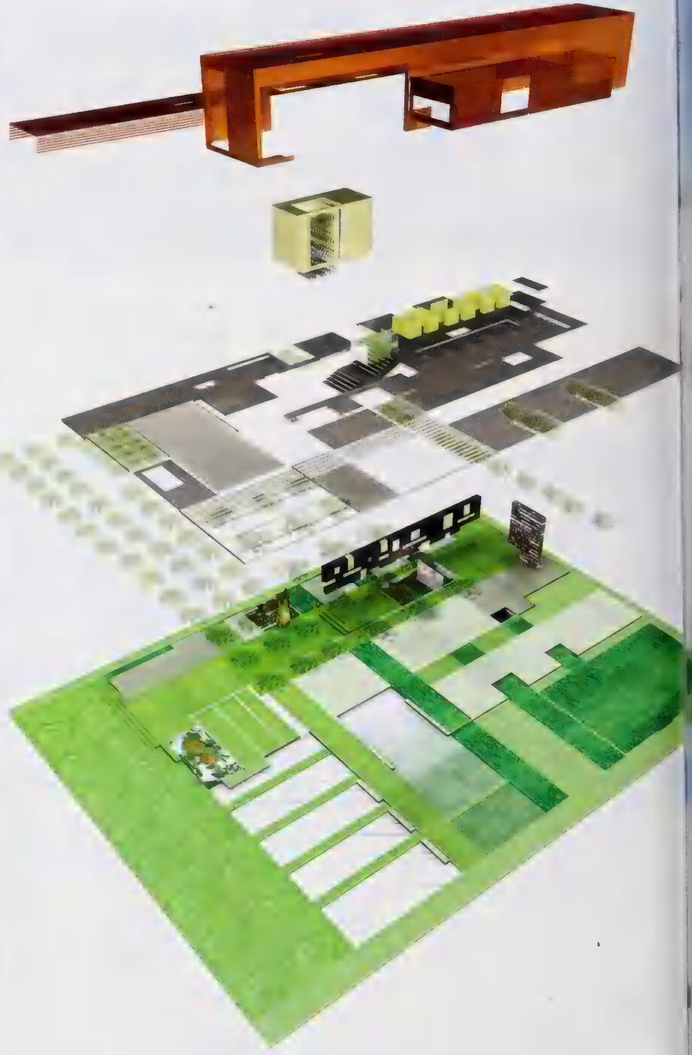
Rinzai Zen Buddhist Retreat, Desert Hot Springs, California

Retreat buildings are structured around the daily ritual of Zen practice as well as being shaped by the views, topography, the sun's paths, and prevailing winds that occur on the Mojave Desert site. One-hundred-forty-degree water trapped by the San Andreas Fault fills a pool for winter and nighttime ritual baths. The perforated metal skin is analogous to that of the local barrel cactus.



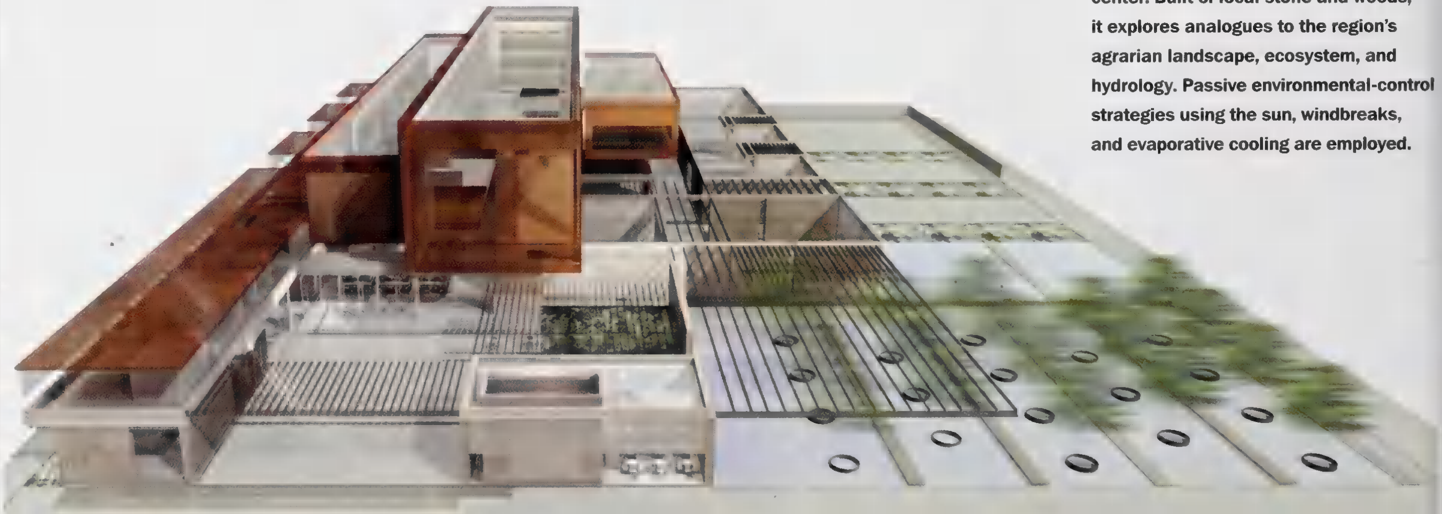






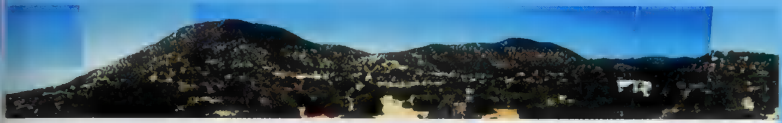
Central California History Museum, Fresno, California

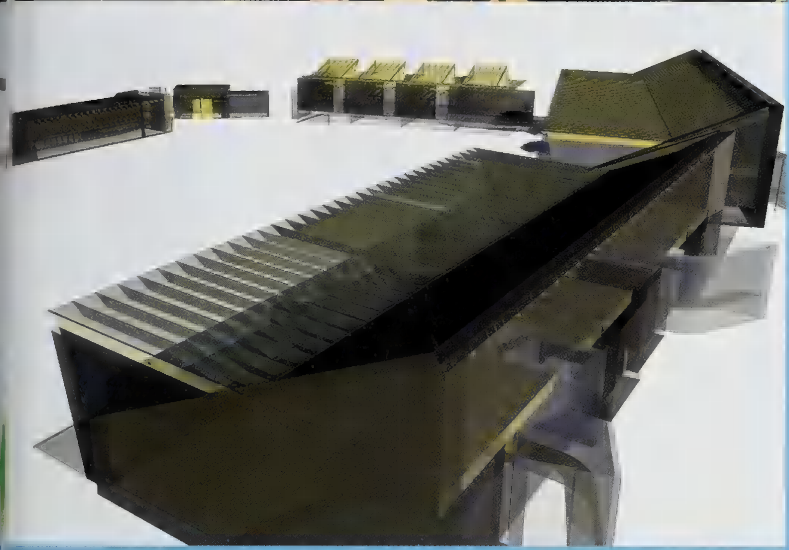
The museum is to become the centerpiece of downtown Fresno's new cultural district, functioning as a museum, library, and research and community center. Built of local stone and woods, it explores analogues to the region's agrarian landscape, ecosystem, and hydrology. Passive environmental-control strategies using the sun, windbreaks, and evaporative cooling are employed.

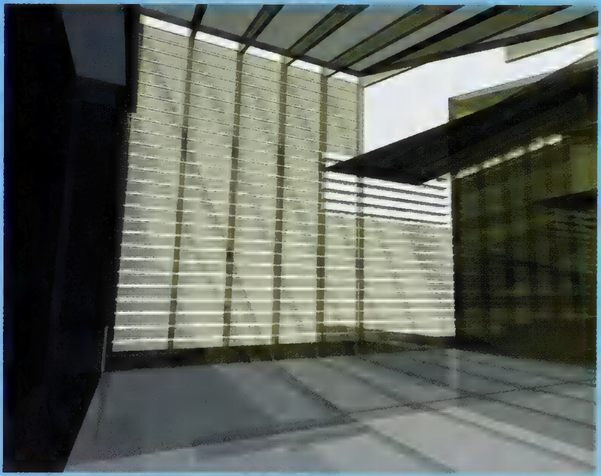


White Oaks Project, White Oaks, New Mexico

This artists-in-residence compound will give emerging artists housing for up to a year as they complete major projects and help renew White Oaks, a ghost town. The buildings are being constructed of steel and wood-frame members, glass, and rammed earth. They have been sited to create shelter from the harsh climate and to capture water, sun, and magnificent vistas.

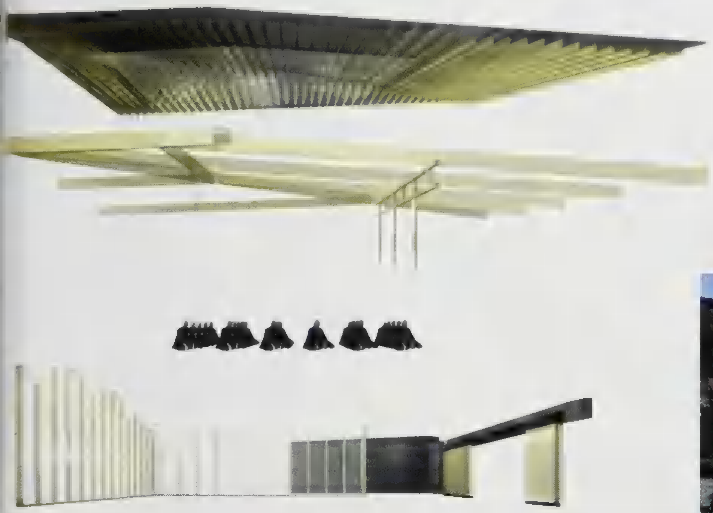


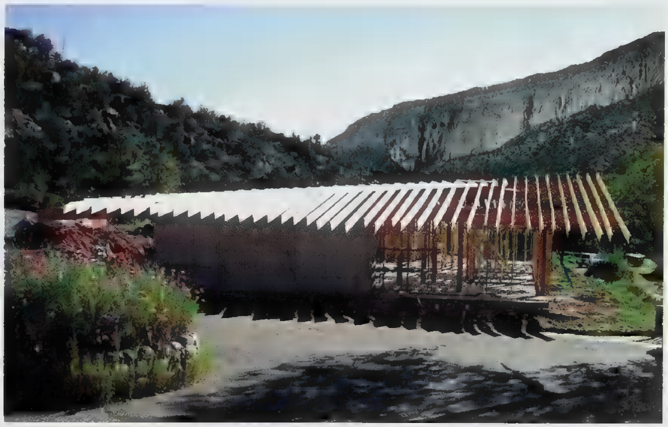




Center of Gravity Foundation Hall, Jemez Springs, New Mexico

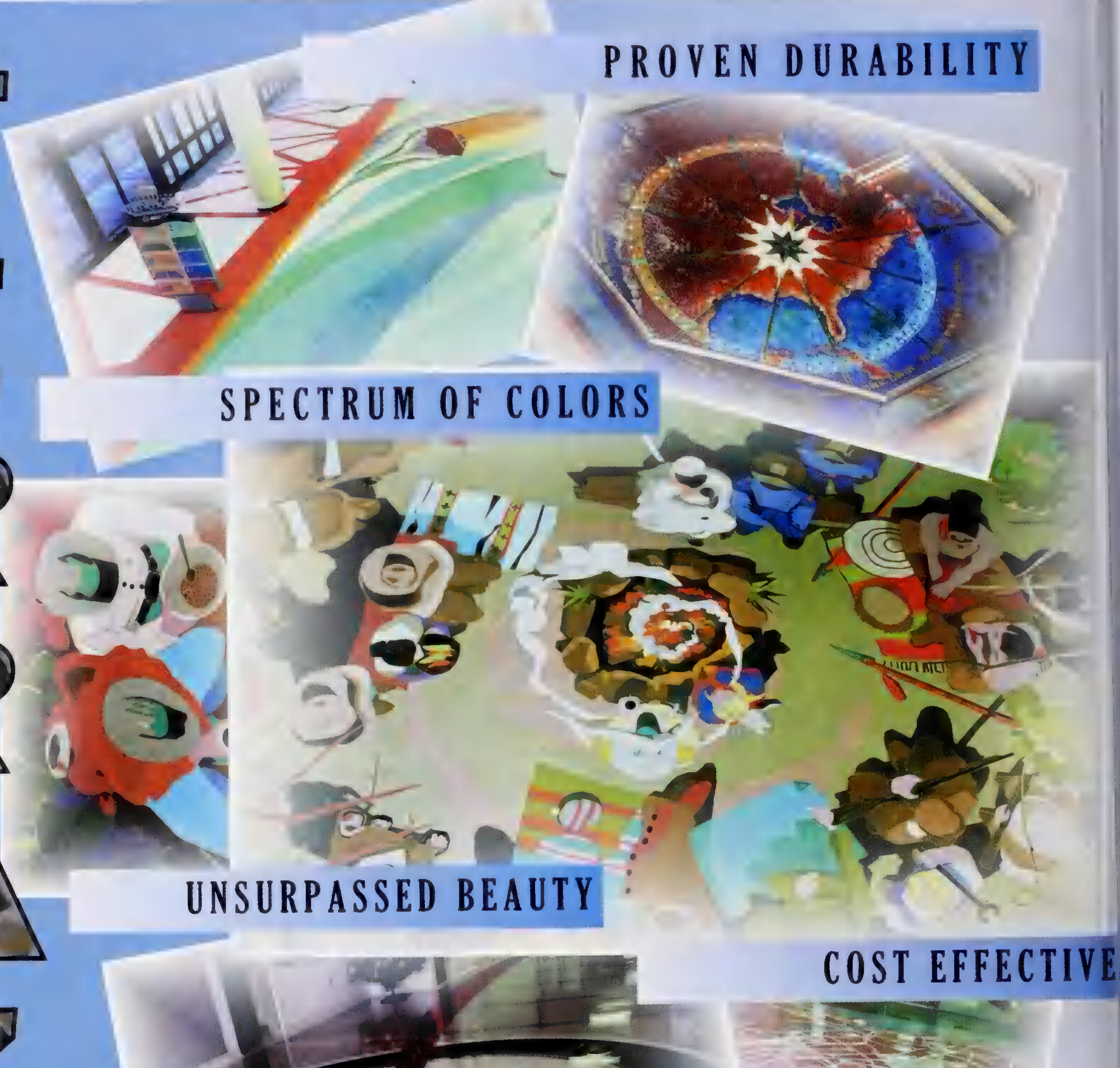
The Center of Gravity Foundation Hall serves as the primary teaching and meditation hall for an existing Zen Buddhist compound. A folded metal roof plane hovers over two adjacent boxes, one of rammed earth, the other of polycarbonate over a laminated lumber. The east wall of the building comprises a series of sliding panels that open onto a garden and views of the mountains.





You can't do this with tile...

TERRAZZO



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DESIGN STUDIOS

Architects Love Funk

FOUR URBAN SETTINGS OFFER THE PERFECT ROUGH BEGINNINGS FOR INTERVENTION AND CREATIVE BRUSH STROKES.

PHOTOGRAPHY: © CLAUDIO SANTINI (1); GEORGE HEINRICH PHOTOGRAPHY (2,4); DUCCIO MALAGAMBA (3)

1.

Seattle

Suyama Peterson Deguchi hatched a tripartite scheme that included street-level retail, a courtyard gallery, and 2,000-square-feet of offices.

2.

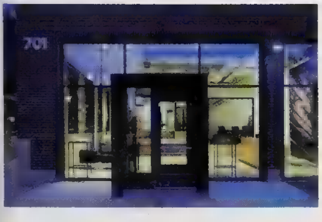
Minneapolis

RSP Architects inhabits a former brew house with turrets, widow's walk with weather vane, bull's-eye dormer windows, and dramatic arches.

3.

Terrassa, Spain

Oliva - Remolà Architecture Studio built their office on two narrow lots facing two nondescript streets, wedged between buildings on either side.



4.

Minneapolis

Hammel, Green and Abrahamson found a biscuit factory's poured-in-place concrete structure to be the perfect work environment.

By Jane F. Kolleeny

Who is more qualified to design an architecture office than architects? As the foremost creative members of the building design team, architects work collaboratively, requiring spaces that resemble brainstorming incubators. Many firms organize by studio, where affiliation changes frequently, so staff must be able to move easily in a space that is flexible. Areas set aside for team gathering are common, as are places for plotters and other high-tech equipment—and, of course, the requisite model-making quarters are messy, as work is forever under way.

Many architectural offices reside in urban areas that border city centers with multiple work opportunities. Also, sunny loftlike spaces to spread out in are common and affordable on the city's edge. The four buildings featured here are located in partially derelict areas ripe for renewal. All offices share in abundant natural light, a necessary ingredient to the visually based design process.

The offices of both Hammel, Green and Abrahamson (HGA) and of RSP involve adaptive reuse of large, former industrial, stand-alone buildings along the Mississippi River in Minneapolis. Both are National Historic Landmarks. What remains from their previous use contributes wonderful color and character to the transformed spaces. HGA removed six of seven ovens from the former biscuit factory where it located its office, creating a dramatic 40-foot volume of space around the remaining oven on the upper floors of the building, where historic artifacts are stored. In a cavernous atrium of open space, beer vats once stood in the vintage brew house where RSP established its studios. In this dramatic space, smack in the middle of the building, the architects chose to locate a reception area and glass-enclosed elevators.

Like most architectural firms, Suyama Peterson Deguchi and Oliva - Remolà are modest in size. The Oliva - Remolà Studio, squeezed tall on a tight urban lot among nondescript apartment buildings, is an ingenious new design. Presenting a bold presence on the street, like a miniature skyscraper, it dramatically contrasts with its neighbors. The office of Suyama Peterson Deguchi, which reuses a former livery stable in a gritty neighborhood of hip happenings and decayed remnants, hides coyly behind funky doors. Once inside, its retail and gallery-style spaces offer surprises before finally giving way to the firm's work areas, nestled at the back.

All four projects are cleverly integrated into their existing industrial neighborhoods or buildings, as the case may be, each seductive in its relation to history, showing that architects know how to do funk right. ■

www For additional Design Studio projects, and more information on the people and products involved in the following projects, go to Building Type Study at **architecturalrecord.com**.

Suyama Peterson Deguchi
Seattle, Washington

1

MORE CLOSELY RESEMBLING A GALLERY, THESE OFFICES HELP THE ARCHITECTS CONVEY A REFRESHING ARTISTIC SENTIMENT.

By Sheri Olson

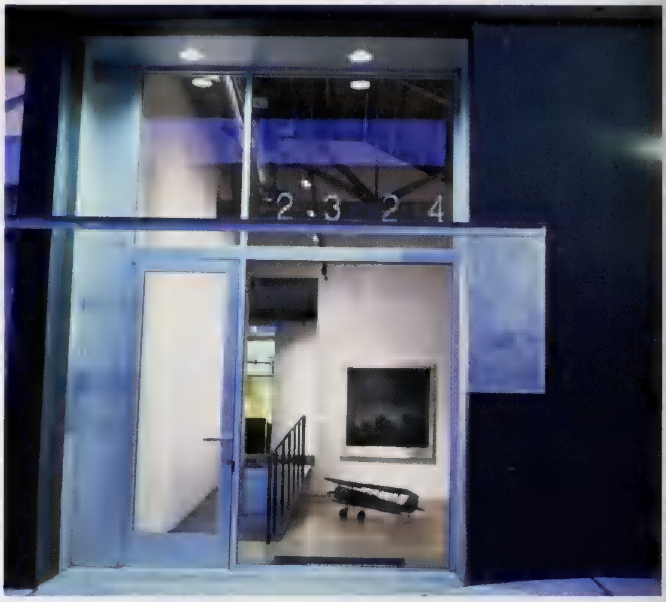
Architect: *Suyama Peterson Deguchi; George Suyama, FAIA, partner in charge; Jay Deguchi, project architect; Ric Peterson AIA, Jeff King, Kim Lavacot, project team*
Owner: *George and Kim Suyama*
Consultants: *Swenson Say Fagét (structural)*

Size: *12,283 square feet*
Cost: *$500,000*

Sources
Metal/glass curtain wall: *Kawneer*
Aluminum windows: *Milgard Windows*
Glazing: *Cardinal Low-e2*
Skylights: *Crystalite*
Sliding doors: *Northstar Woodworks*
Cabinetwork and custom woodwork: *TRSW*
Fiberglass panels: *American Acrylic*
Metalwork furnishings: *Gulassa; Drew Middlebrooks; Kevin Quinn*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Workdays at Suyama Peterson Deguchi might include a visit from a group of out-of-state university students or a couple of globe-trotting art aficionados dropping by to check out the latest installation in the gallery. Tourists mix with clients who get a full-blown introduction to the firm's emphasis on elemental materials and pared-down designs. "The new office helped us to clarify our design direction and has allowed us to push our ideas with clients in a way that our old space couldn't," says George Suyama, FAIA.



Program

The program is a result of a surfeit of space—12,283 square feet for an eight-person office (now 19), which concentrates on high-end residential projects. When the search began for new space, the goal was not more room, but a more urban—and urbane—location than its old residential neighborhood. Suyama spotted a late 1800s livery-stable-turned-automobile-service-garage in Belltown, a gritty downtown neighborhood where hip nightclubs rub shoulders with old maritime flophouses. He was struck by the vast—albeit dark and filthy—barrel-vaulted space.

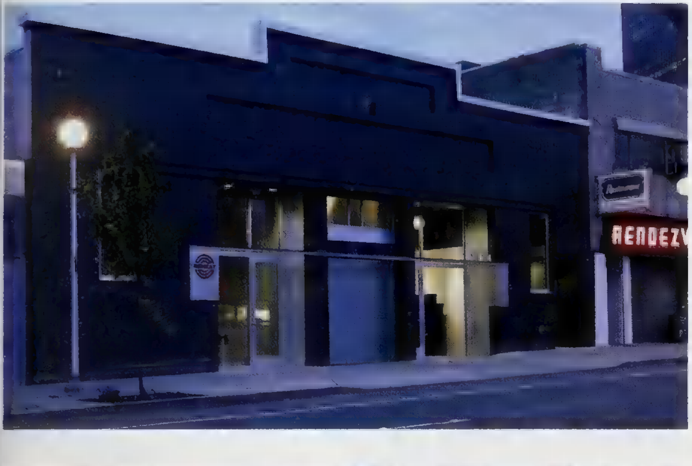
A scheme emerged from the city's requirement for storefront space along the street and the office's need for only 2,000 square feet at the back. An open area in the center of the building would house an exhibition space. Word got out about the huge space, and local galleries began inquiring about renting it to show large pieces of art.

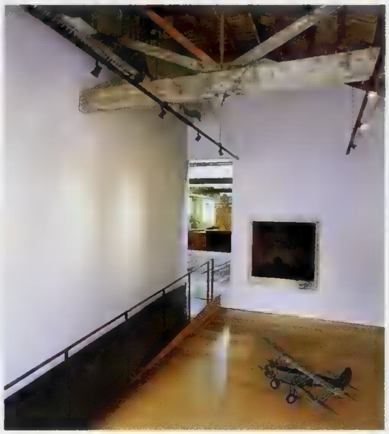
Solution

The first clues signaling new life behind the anonymous gray facade are the deep metal frames surrounding Minimalist glass storefronts and a metal garage door. A steel channel bolted onto the facade is part of an extensive seismic retrofit and sets the tone for the confrontational relationship between the new and the old, the raw and the refined inside. "We didn't want to do a restoration, we wanted to do an intervention," says Suyama.

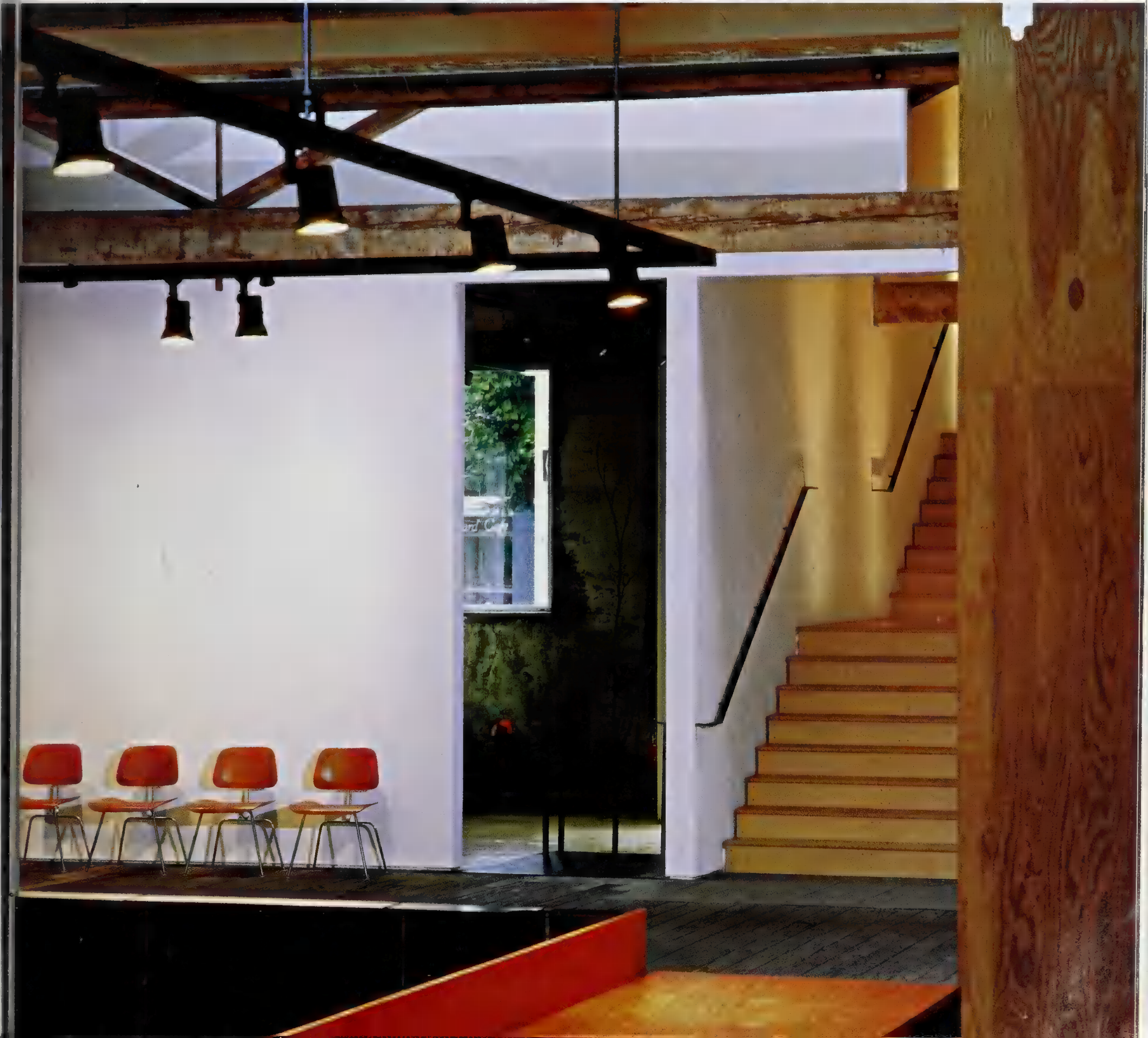
One of biggest undertakings was lowering the floor several feet along the front of the building to match the sidewalk, for a more accessible retail space. What was once the second floor now functions as the first floor, thanks to city fathers who regraded this section of Seattle at the turn of the last century, burying a whole level of the city underground. The past is left exposed in the mottled old walls where the below-grade windows are patched with new concrete. "We loved the building's patina but didn't want to be nostalgic about it," says Suyama.

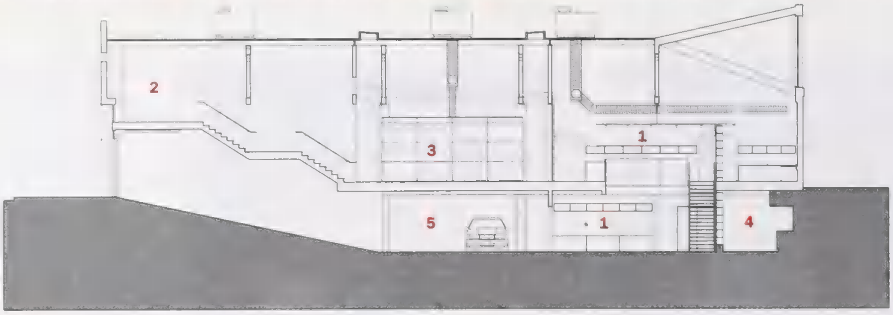
Sheri Olson, AIA, is RECORD*'s Seattle-based contributing editor and architecture columnist for the Seattle* Post-Intelligencer.





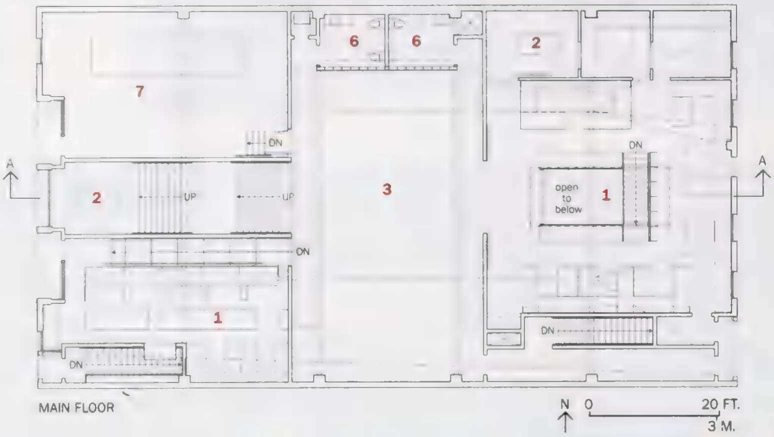
The first clues of new life behind the anonymous gray facade are the deep metal frames surrounding Minimalist glass storefronts and a metal garage door (top left and opposite). From the front door, a steel ramp leads up to the gallery space at the center of the building (left and below).





SECTION A-A

1. *Office*
2. *Conference*
3. *Gallery*
4. *Kitchen*
5. *Garage*
6. *Bathroom*
7. *Retail*



MAIN FLOOR

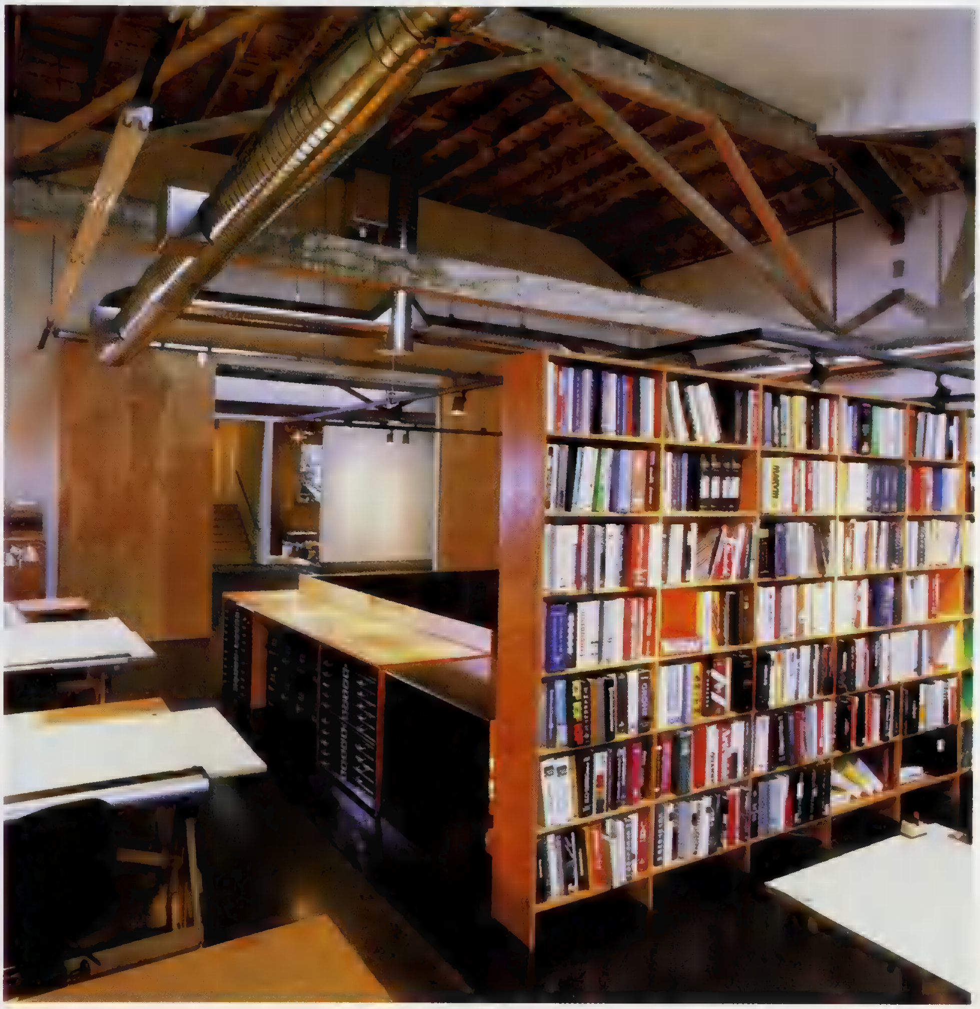
From the front door, a steel ramp leads up to the 20-foot-tall gallery space at the center of the building, separated from the retail and office areas by white walls that bisect the building and provide needed shear walls. The gallery retains the worn wood-plank floor, with its exposed old-growth wood trusses and decking overhead intact. Narrow skylights parallel to the front and back walls cut into the roof to bring light deep inside. A luminous screen of translucent fiberglass panels on a wood-stud frame conceals the rest rooms along the north wall.

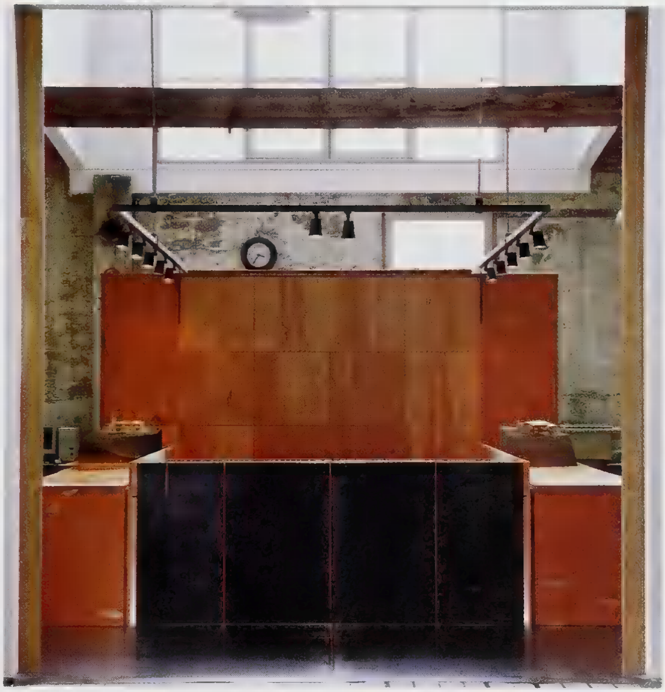
At the front of the building is a small second-floor conference area. A grand staircase sweeps up from the gallery to this private aerie. A floor-level window provides an unexpected glimpse of street life below, and the movement of the sun is mapped on the bare white walls as it spills through a steel oculus cut into the front facade.

Large plates of hot-rolled steel differentiate the office floor from the gallery. Usually open, two huge plywood doors can roll shut like barn doors to close off offices from the gallery. A new roof monitor that angles up toward a large window high on the back wall of the building serves as the focal point of the office area. Below, an 18-by-8-foot opening with a rolled-steel stair reaches down to a large wood shop in the basement where designers can mock-up entire building components.

Commentary

Due to the unique design of the office, Suyama Peterson Deguchi enjoys a public presence unusual for architects. The success of the art shows led to the organization of the nonprofit Suyama Space in 1998, and a manager was hired to curate the installation-oriented gallery. More recently, the firm started a showroom in the retail space that allows the firm to experiment with furnishings and materials beyond specific projects while keeping a number of local artisans busy. Offering openness and light, the gallery is a calm interlude between the bustling showroom and office, as well as the city. "Its like passing through a decompression zone on the way to the office," says Suyama. "It never fails to lift me up." ■





The gallery retains the worn wood-plank floor, with its exposed old-growth wood trusses and decking overhead intact (opposite). A view from the office space at the back of the building looking toward the front (above). Narrow skylights parallel to the front wall cut into the roof to bring light deep inside (below).

Offices of RSP Architects
Minneapolis, Minnesota

2

DERELICT FOR DECADES, THE HISTORIC 19TH-CENTURY GRAIN BELT BREW HOUSE IS METICULOUSLY TRANSFORMED INTO SPACIOUS 21ST-CENTURY OFFICES.

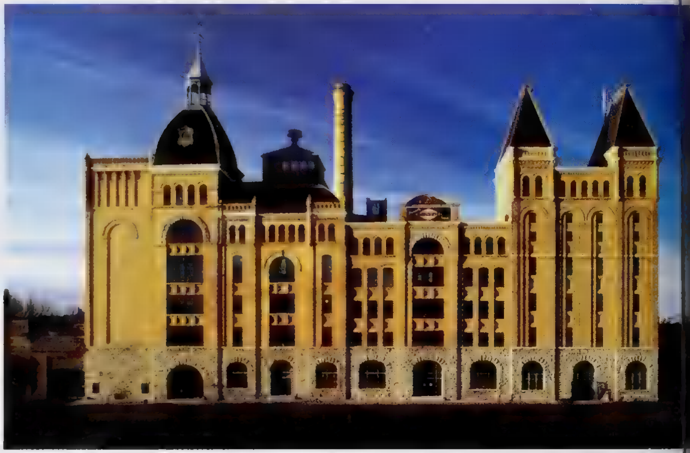
By Camille LeFevre

Architect: *RSP Architects—David C. Norback, AIA, principal in charge; Bryan Gatzlaff, AIA, project manager; Dustin Bennis, Mark Forsberg, AIA, Pat Hilleman, Terry Ingle, Robert Jepsen, AIA, Thom Lasley, Kathleen Linderkamp, Derek McCallum, John Merten, Jim Noreen, AIA, John Panian, AIA, Paul Whitenack, AIA, project team*
Owner and general contractor: *Ryan Companies US*
Consultants: *Meyer Borgman & Johnson (structural); Rolf Jensen Associate and the Mountain Star Group (fire protection); LightSpaces (lighting); Melchert Walkky (civil); Hess Roise (project historian); Liesch Associates (environmental)*

Size: *96,000 square feet*
Cost: *$17.2 million*

Sources
Windows: *Glass Masters*
Metal fabrications (including stair): *Metro Manufacturing*
Millwork: *Ives Design*
HVAC: *Master Mechanical*
Plumbing: *Southside Plumbing*
Electrical: *Elliott Contracting*
Elevators: *Thyssen Krupp*
Flooring: *Acoustical Floors; Twin City Tile & Marble; Acoustics Associates; ReSource Minnesota; W.L. Hall*

WWW For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.



The Grain Belt Brew House, located on the Mississippi riverfront in northeast Minneapolis, has long been a city landmark. Designed in 1891 by Frederick Wolff and William Lehle, the 96,000-square-foot structure comprises four connected buildings ranging in style from neo-Romanesque, Late Gothic, and Early Renaissance to neo-Baroque and Second Empire. With its turrets, widow's walk with weather vane, bull's-eye dormer windows, and dramatic arches, the brew house conveys a powerful Old World presence in this working-class neighborhood.

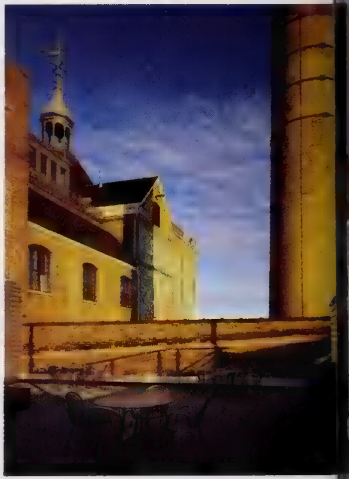
On Christmas day 1975, the last batch of Grain Belt beer left the brewery. The building's contents were sold or scrapped and the edifice sat vacant for decades. Though its place was secured on the National Register of Historic Places, the building's constraints were formidable. Whoever took on the brew house would have to clean up asbestos, toxic mold, and petroleum-distillate products, and contend with structural problems, uneven floor plates between the units, and multistory holes where brewing vats once stood.

Program

In 1998, RSP Architects decided to consolidate its three offices and looked into the Grain Belt Brew House. "We wanted a stimulating environment to work in, a place with a big wow factor to help us enjoy our workday," says David Norback, AIA, president of RSP.

Support from the city and a committed developer, along with the expertise of architects, engineers, contractors, and assorted specialty consultants, allowed for preservation of the six-story building's distinctive architectural features as it was converted into design offices.

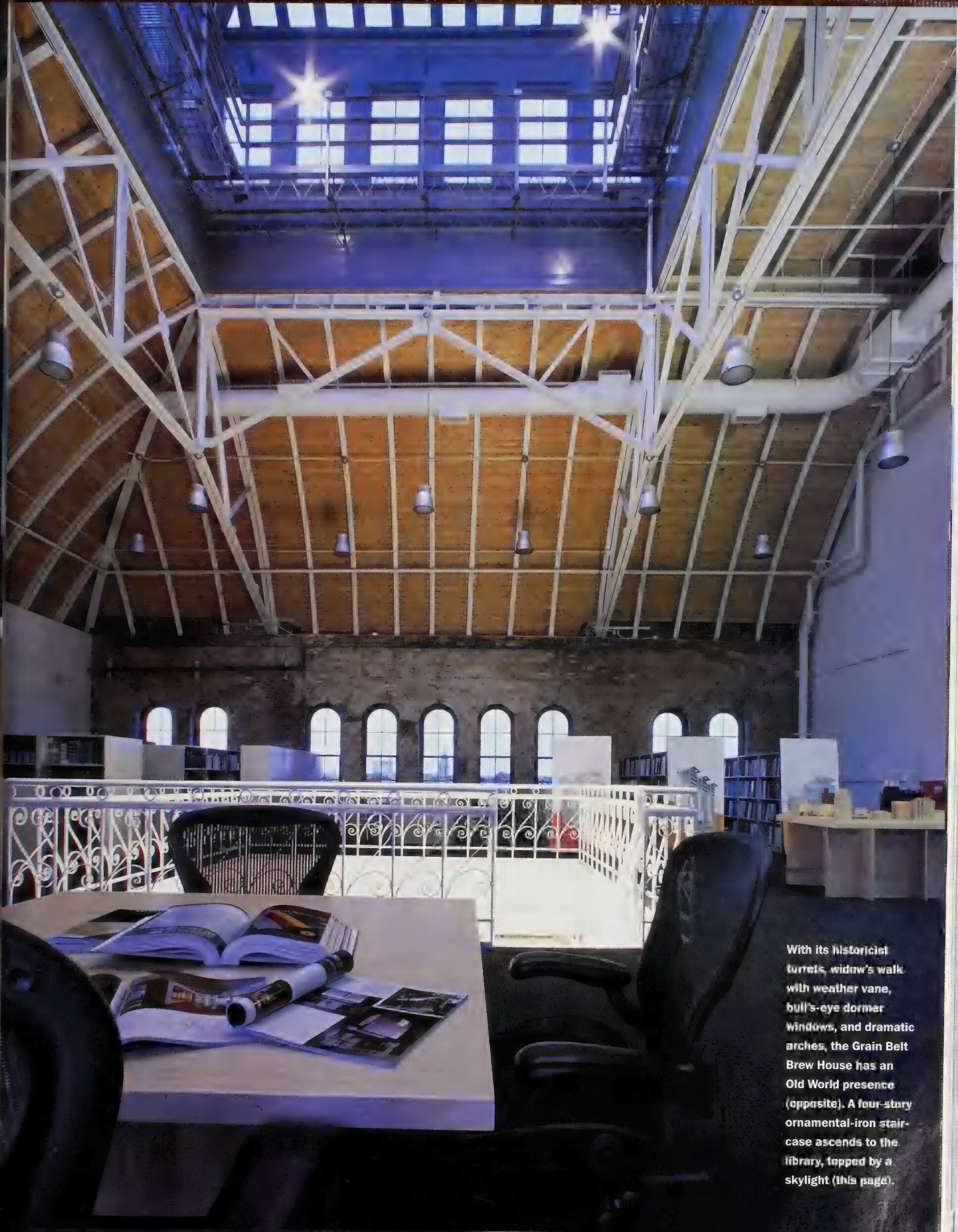
Renovation began in 2000. So did the surprises. Workers found deteriorated structural steel and toxic mold beneath wall surfaces. One tower floor was replaced; four wells under the site were capped; the structural integrity of the 200-foot-high smokestack was strengthened. Nonetheless, the interior's "spatial hierarchy, the light, the nooks, crannies, and volumes were perfect for us," Norback says. "We liked the visual identity we could carve out of this place."



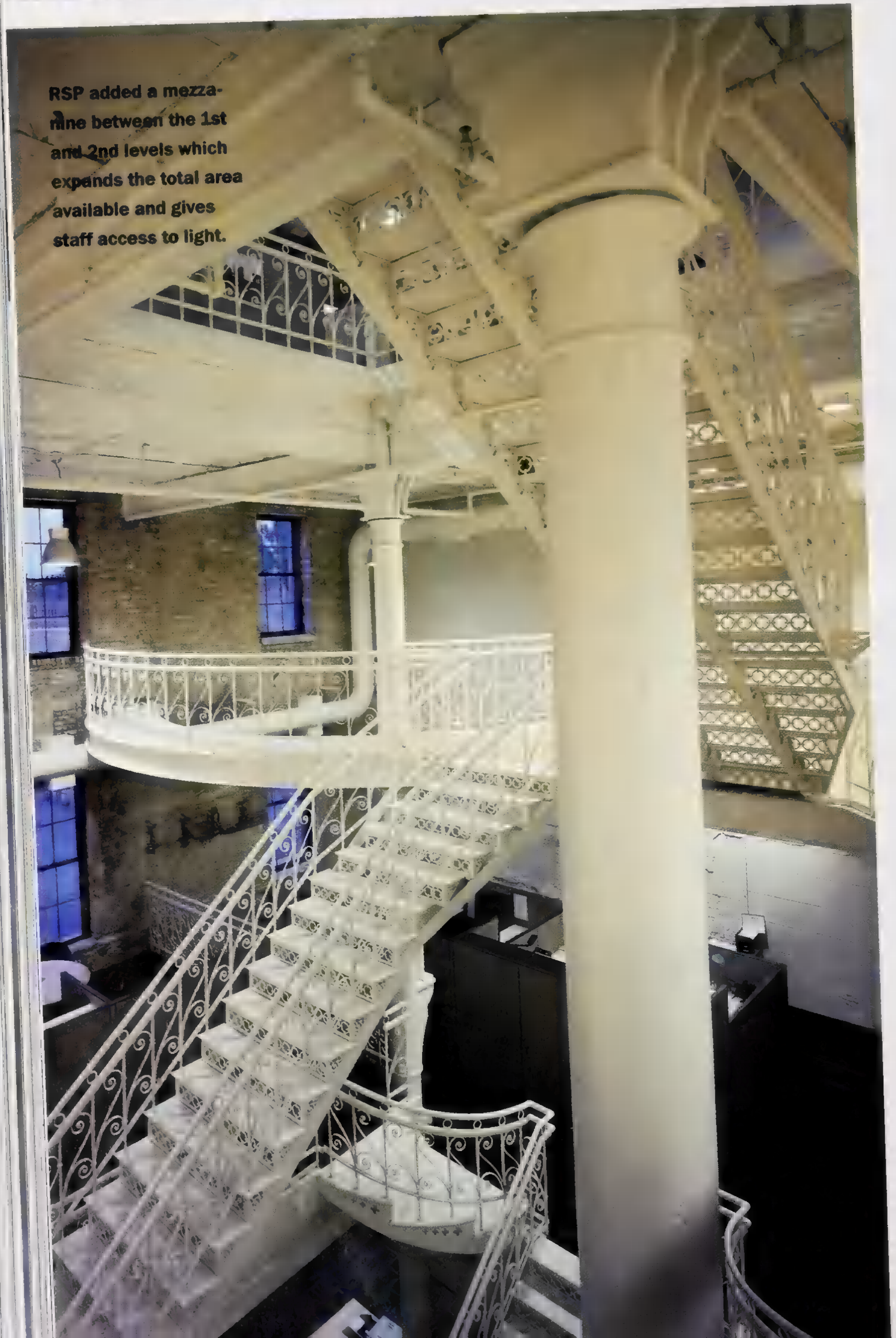
Solution

The cavernous atrium that housed brewing vats now serves as the reception area. A glass elevator runs through the enormous holes where the vats stood and anchors a new system of north-south catwalks that connect major sections of the brew house. An existing four-story ornamental-iron staircase (repaired, then renovated to meet code and painted

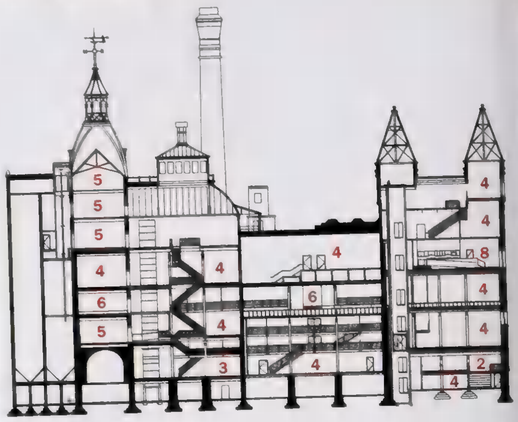
Editor of Architecture Minnesota, *Camille LeFevre writes frequently about architecture and design.*



With its historicist turrets, widow's walk with weather vane, bull's-eye dormer windows, and dramatic arches, the Grain Belt Brew House has an Old World presence (opposite). A four-story ornamental-iron staircase ascends to the library, topped by a skylight (this page).

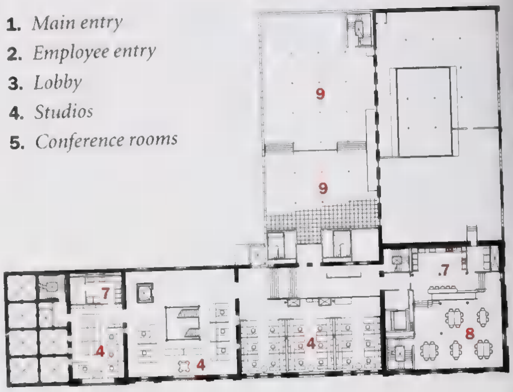


RSP added a mezzanine between the 1st and 2nd levels which expands the total area available and gives staff access to light.



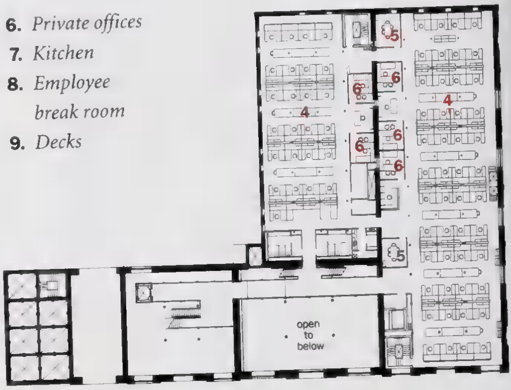
SECTION A-A

1. *Main entry*
2. *Employee entry*
3. *Lobby*
4. *Studios*
5. *Conference rooms*

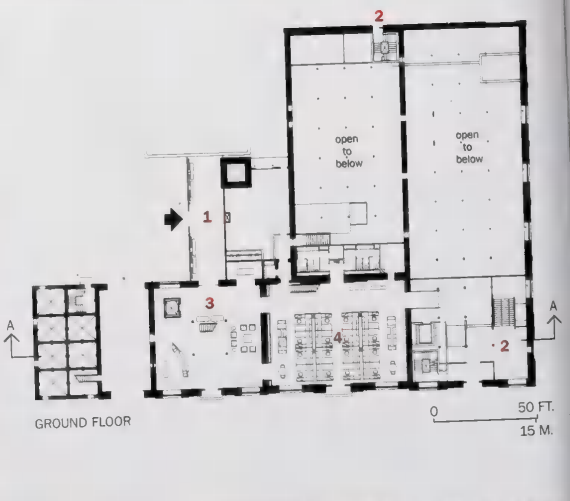


THIRD FLOOR

6. *Private offices*
7. *Kitchen*
8. *Employee break room*
9. *Decks*



FIRST FLOOR



GROUND FLOOR

white) winds up to the firm's library, topped by a skylight. Stacked in a former grain elevator beneath the cupola are six floors of offices and conference rooms.

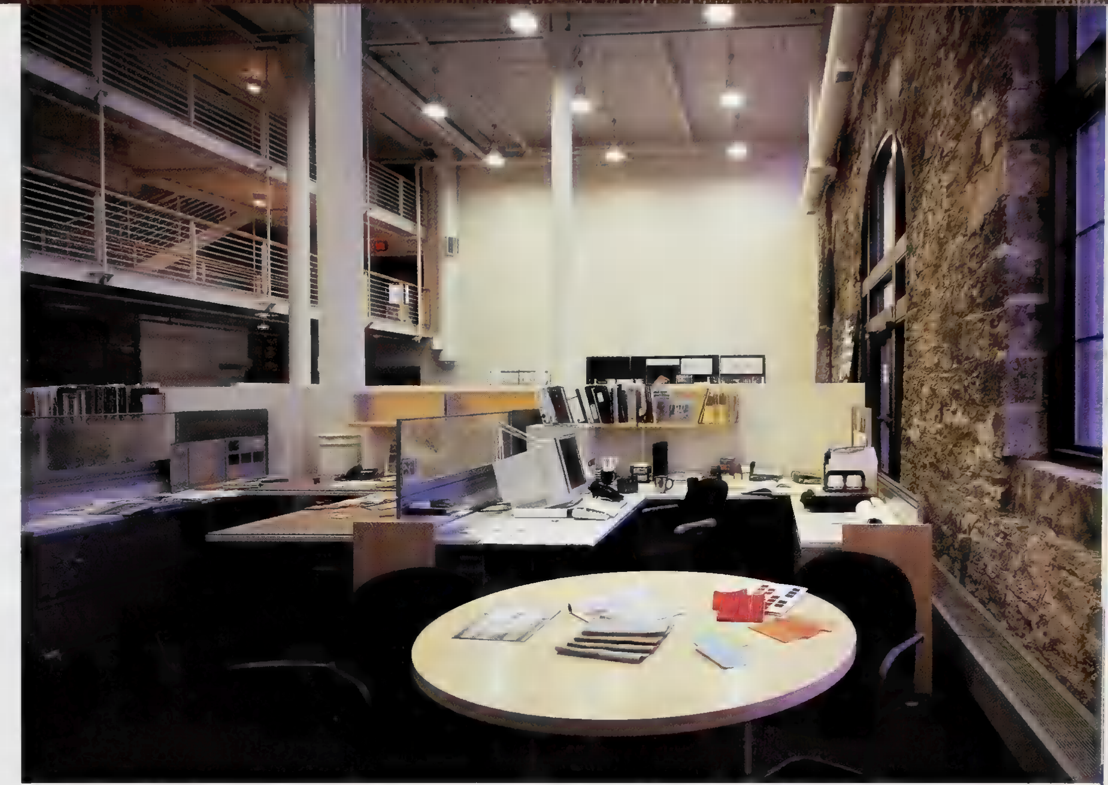
In what were once warehouse areas, floors sloped for drainage are now covered with a level raised-floor system that houses the firm's electrical and voice/data cabling. Between the first and second levels RSP added a mezzanine, which expands the total area available for workstations, creates spaces for private offices and conference rooms along inner walls, and gives all staff access to light.

On the building's north facade, preservation authorities approved cutting 72 new openings and installing new windows in locations designated by the original architects. On secondary facades, new windows feature an installation pattern sympathetic to the established fenestration. To accommodate the building's existing 13-foot-on-center column spacing (which restricted even distribution of standard 8-by-8-foot workstations) and maximize usable square footage, RSP grouped individual workstations around shared group work areas.

Commentary

RSP maintained an understated aesthetic that enhances the brew house's industrial architecture. Floor coverings vary from slate tile in the entry and lobby to natural wood and carpet in the work areas. New wall surfaces and existing columns, painted white, further brighten the light-filled interior and draw the eye to such historic details as original golden Chaska-brick walls still flecked with bits of plaster and keystones marked with original contractor notations. For Norback, the end result is "a serendipitous, delightful set of spaces, even if there are bumps and tweaks we're still trying to massage out."

In adaptively reusing this landmark building, RSP created a singular office space revealing the firm's vigor, inventiveness, and commitment to the community. Nearby, a mixed-use development, theater, and library are currently under way, revitalizating the neighborhood. ■



An understated aesthetic enhances the brew house's industrial architecture. New wall surfaces and existing columns are painted white to brighten the light-filled interior.

Oliva-Remolà Studio

Terrassa, Spain

3

SQUEEZED BETWEEN NONDESCRIPT INDUSTRIAL BUILDINGS, THIS LITTLE JEWEL STANDS TALL.

By David Cohn

Architect: *Oliva - Remolà Architecture Studio—Maria Rosa Remolà Ferrer, Amadeu Oliva Uriel, principals; Lluis Valldaura Claret, team*

Owner: *Amadeu Oliva Uriel and Maria Rosa Remolà Ferrer.*

Consultants: *Gestió d'enderrocs immobles (demolition); Excavaciones Varo Hnos (excavation); Ferrallados Asis (structural); Fontaneria Terrassa (plumbing); Armengol Serveis Electrics (electricity); EBYP (elevator); Reinfred (HVAC)*

General contractor: *Novapolis*

Size: *3,444 square feet*

Cost: *$215,000*

Sources

Furnishings: *Amadeu Oliva Uriel*

Metal chairs: *Oscar Tusquets*

Lighting: *Amadeu Oliva Uriel*

Plumbing: *Voila faucets*

Hardware: *Cerrajeria Natalio*

Windows: *Anco*

Wood floor: *Cobra Instalaciones y Servicios*

Concrete floor: *Lotum Regeneracion Industrial*

Wood doors and paneling: *Vicmor*

Upswinging doors: *Puertas Metalicas Alfi*

Chairs: *Casas*

Paint: *Serena*

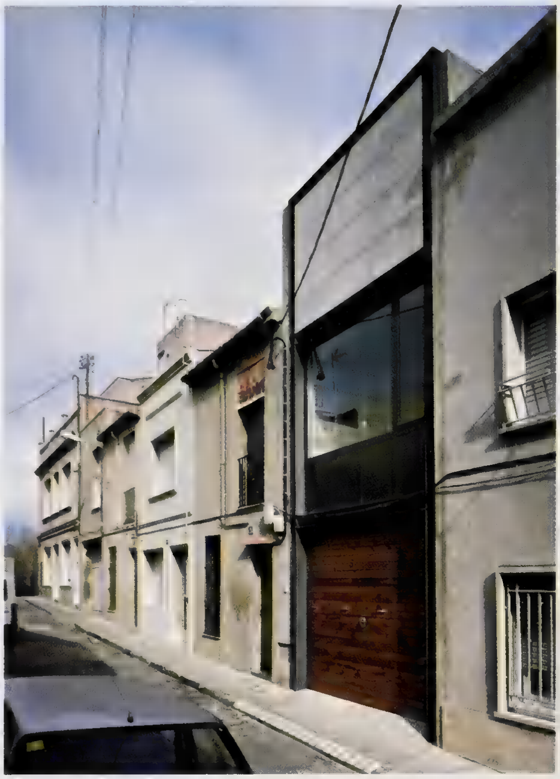
www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Terrassa, Spain, seems an unlikely place for two architects to hang their shingle. One of the grim 19th-century industrial cities that ring Barcelona, its narrow streets are packed with poorly constructed row houses, without light, air, or ornamental pretense, that once stood cheek-by-jowl with textile mills and their belching chimneys. Today, the factories are closed, and the outer limits of the city are filling out with nondescript apartment buildings. It took a certain amount of vision on the part of architects Amadeu Oliva and his wife, Rosa María Remolà, both Terrassa natives, to see the potential of the constricted site that they bought in the heart of town to build their office. Oliva, 45, and Remolà, 42, work with a staff of three, mainly on private house designs in Terrassa's suburbs; they are currently designing and developing a small mixed-use project in the town center.

Context

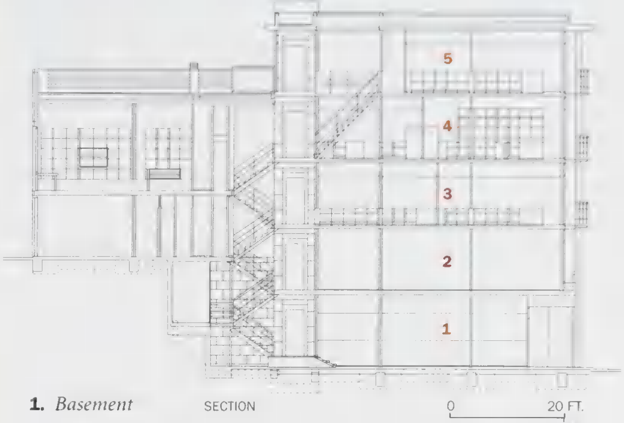
Two back-to-back lots facing two streets provided the site for the studio. Scarcely 13 feet wide and more than 72 feet deep, the lots were wedged between continuous buildings on either side and had a slope of 25 feet from end to end. The site's situation—overlooking a precipitous ravine known as the Torrent del Vallparadís (Valley of Paradise Torrent), a former gully recently transformed into an attractive urban park that cuts a deep gash through the city—made up for these limitations, however. Remolà and Oliva also realized that by building slightly higher than the existing two-story urban fabric, which is largely protected from growth by local zoning, they could enjoy spectacular views of the verdant mountains that ring the city.

David Cohn is RECORD*'s Madrid-based correspondent and author of* Young Spanish Architects *(Birkhauser, 2000).*

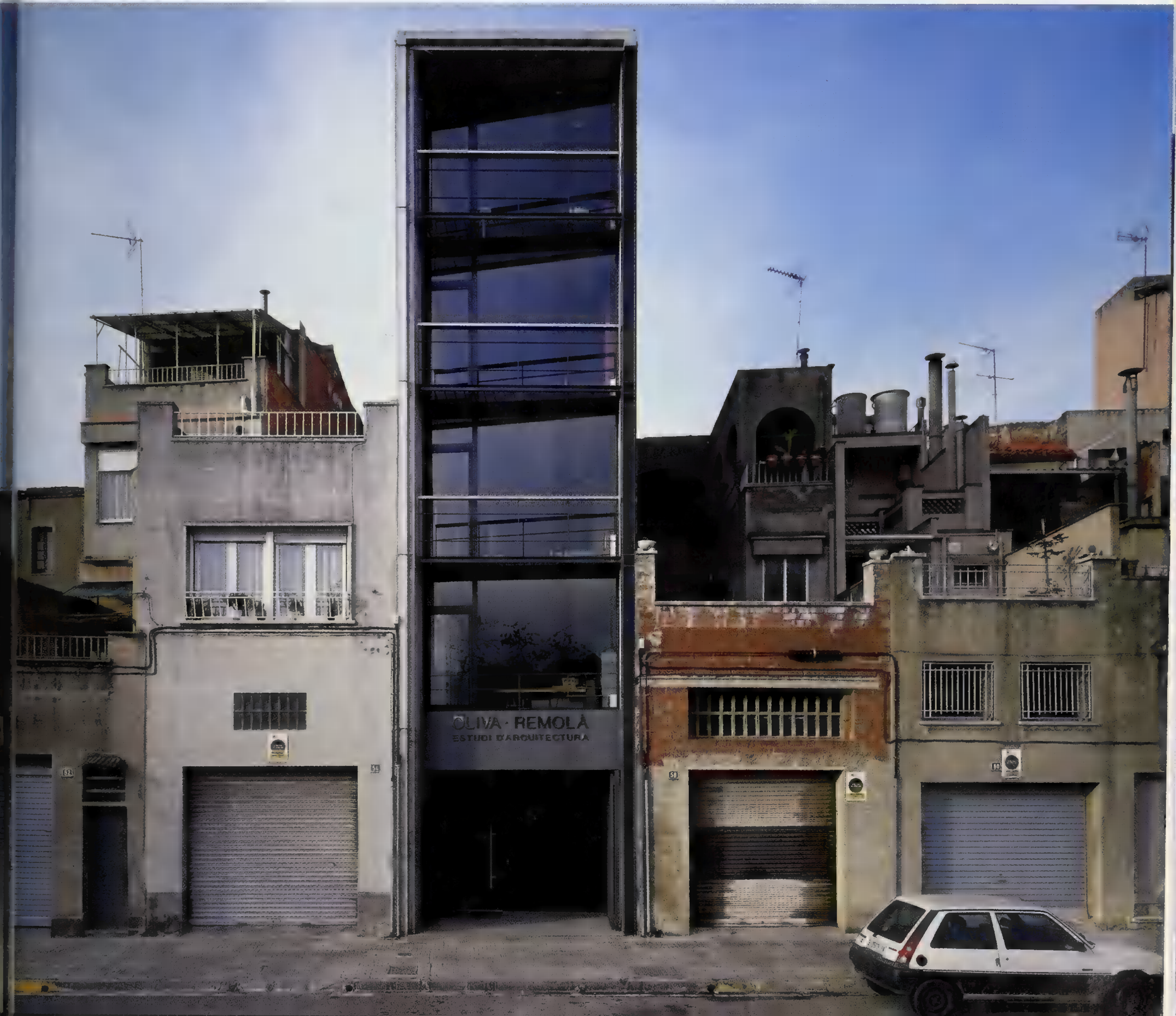


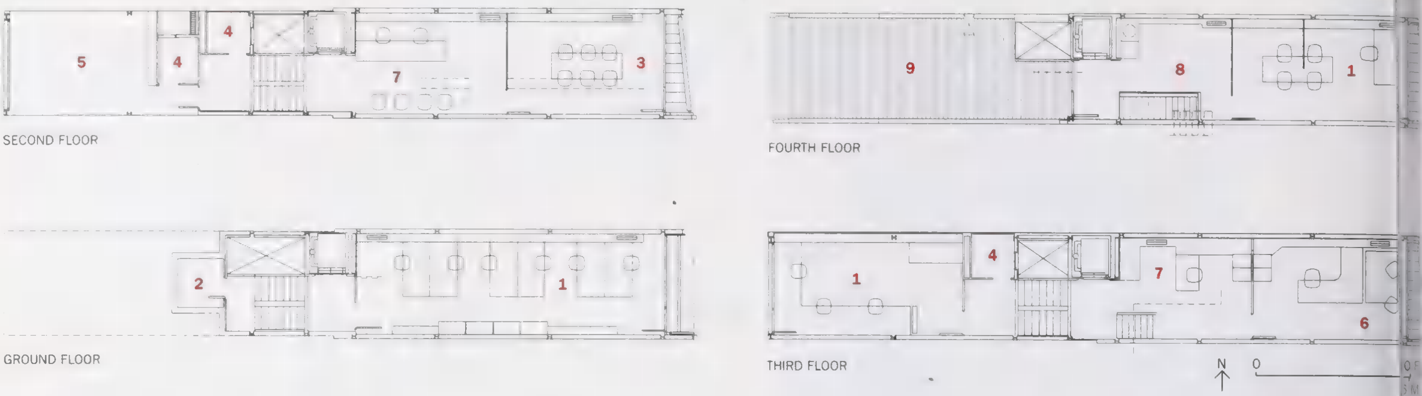
PHOTOGRAPHY: © DUCCIO MALAGAMBA

It took vision on the part of the architects to see the potential of the constricted site that they bought in the heart of town to build their office (above and opposite, bottom). Oliva's penthouse studio has a rooftop terrace (opposite, top).



1. *Basement*
2. *Ground floor*
3. *Second floor*
4. *Third floor*
5. *Fourth floor*

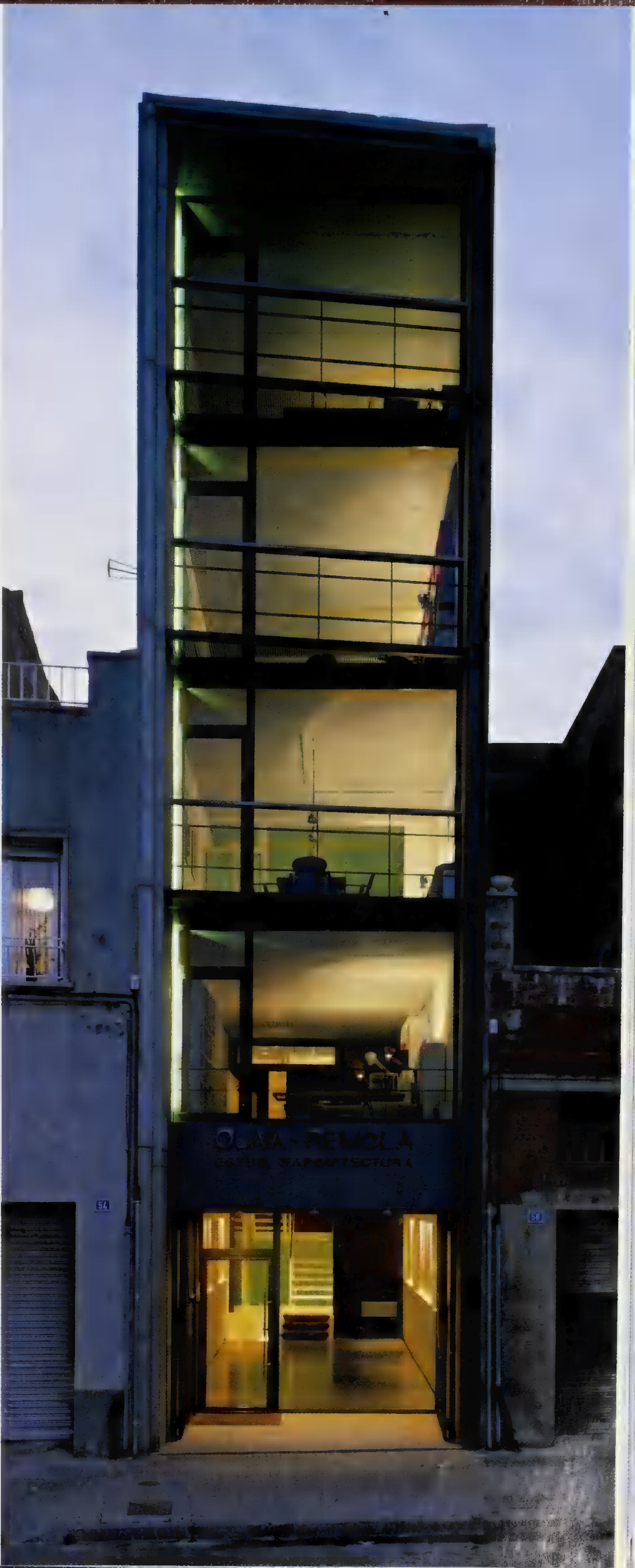




1. *Studios*
2. *Support space*
3. *Conference room*
4. *Bathrooms*
5. *Garage*
6. *Private offices*
7. *Administration*
8. *Lounge*
9. *Roof*

To bring light into the deep center of the building, the architects grouped stairs, an elevator, and bathrooms around a central light shaft that penetrates to the lowest floor.

Despite its direct and understated form, the office (right) offers a dramatic contrast to the surrounding buildings, with their total lack of aesthetic pretense.



Solution

To address the problem of bringing ight into the deep center of the building, the architects grouped stairs, an elevator, and bathrooms around a central light shaft that penetrates to the lowest floor. In section, they staggered the floors n a split-level fashion around the stairs, a highly efficient arrangement permitted by the slope. This arrangement of space creates a fluid sense of luminous openness on the upper floors, where the daily activity of the office takes place.

On the exterior, the difference in elevation and context of the two extremes of the site result in two facades with very distinct personalities. The upper, western facade overlooks one of Terrassa's narrow streets. Here the architects were required by zoning laws to maintain the existing two-story street wall. On the lower, eastern end overlooking the Vallparadís Torrent, zoning permitted the building to reach five stories. Remolà and Oliva located the main entry on this lower facade. An entry-level gallery is succeeded by a second-floor conference room, a reception and secretarial floor, an office floor including Remolà's glass-walled private office, and Oliva's penthouse studio. The opposite, western facade has a small garage for motorcycles on the ground floor (situated half a level below the reception-area floor), a high-ceilinged atelier for computer drafting above, and a rooftop terrace for the penthouse.

The glazed, steel-framed facades are literal expressions of the structure, also exposed on the interior, which consists of a simple skeleton of steel columns and exposed, epoxy-finished concrete floors, connected by open-tread steel stairs. Wiring and plumbing are accessible behind removable panels in the built-in cabinetry of the office areas and the bathroom walls. All of these surfaces, including the walls of the elevator shaft, are finished in a lacquered wood veneer. For the exterior steel framing and balconies, Oliva and Remolà specified a custom color that they find softer in tone than absolute black. The exposed ends of the party walls are finished in precast-concrete elements, composed of infill masonry, a layer of insulation, and a finish of thin cementacious waterproofing panels.

Commentary

The tall glass facade of the studio is a striking presence on the skyline of the Vallparadís Torrent, like a miniature skyscraper. Despite its direct and understated form, it offers a dramatic contrast to the surrounding buildings, with their total lack of aesthetic pretense. The industrialists who made their fortunes here at the end of the 19th century reserved their architectural patronage for the villas they built in the hills north of the city, or for their apartments and town houses in Barcelona. Barcelona's famous design culture, which in those same years produced the Moderniste architecture of Antoni Gaudí, Lluis Domènech i Muntaner, Josep María Jujol, and others, was made possible by this industrial wealth. Today, Remolà and Oliva, like other young architects who have established their practices in modest communities throughout Spain, are pioneers in introducing the legacy of this culture to a wider public. With their transparent, luminous studio, they have brought back to Terrassa one of the more delicate fruits of its industrial past. ■

Offices for Hammel, Green and Abrahamson

Minneapolis, Minnesota

4

THE HISTORIC LOOSE-WILES BISCUIT FACTORY REMAINS INTACT IN THIS MINIMAL INTERVENTION.

By Camille LeFevre

Architect: *Hammel, Green and Abrahamson; Bake Baker, AIA, partner in charge; E. Tim Carl, AIA, design partner; Loren Ahles, FAIA, design partner; Bob Lungren, AIA, partner/project architect; Ronda Miles, Mary Shaffer, AIA, Markian Yereniuk, Ted Lee, project team*
Owner: *701 Investments*
Consultants: *The Talaske Group (acoustical); Miller Dunwiddie (historical); Lerch Bates (elevator)*
General contractor: *Diversified Construction*

Size: *147,000 square feet*
Cost: *$10 million*
Completion date: *2001*

Sources
Interior finishes: *Artifex Millwork; Principal Fixture and Millwork*
Paints and stains: *Benjamin Moore; Sherwin Williams*
Office furniture systems: *Teknion; Artifex Millwork; Haworth*
Chairs: *Cape "Bilbao"; Herman Miller; Haworth*
Resilient flooring: *Lonseal; Azrock; Johnsonite*
Glazing: *Cardinal Glass*
Wood doors: *Mohawk*
Steel windows: *Twin City Steel/KMH Erectors*
Aluminum windows: *St. Cloud*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

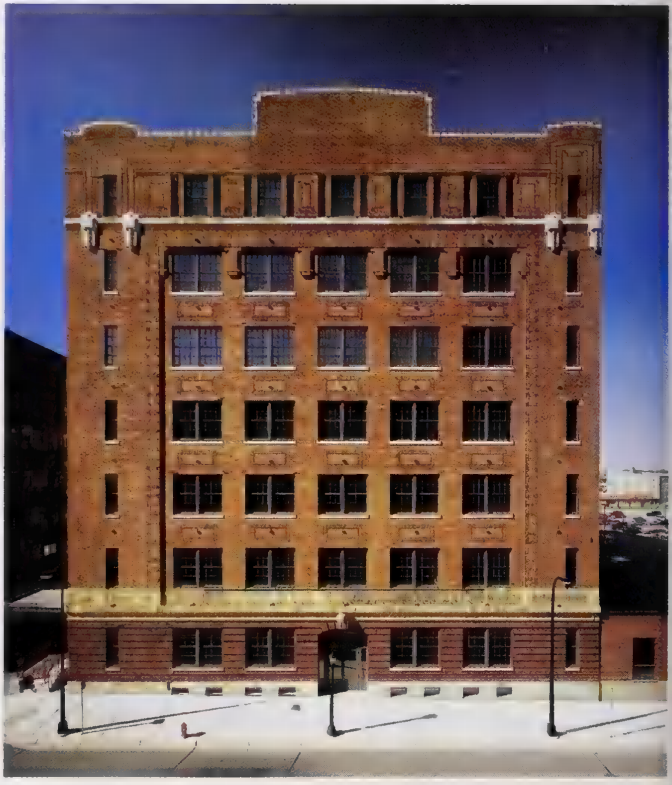
In 1912, the Loose-Wiles Biscuit Company opened in a seven-story, patterned-brick building designed by Edwin H. Hewitt in Minneapolis's warehouse district on the Mississippi. The building's west and north sides feature limestone lug sills and a horizontal band of limestone with Prairie Style ornamentation between the sixth and seventh stories. Inside, the bakery's modern machinery included seven two-story ovens located on the seventh floor "above the fly zone, and away from the dust that blows into the windows nearer the streets," as noted in the *Minneapolis Tribune*, November 2, 1912.

In early 2000, Hammel, Green and Abrahamson (HGA), with more than 400 on staff, chose the building as the opportune place in which to consolidate its three offices and moved into the renovated, 140,000-square-foot structure in August 2001. "We needed to get everybody under one roof and have room to grow," says Bake Baker, AIA, partner in charge of the project.

Program

Listed on the National Register of Historic Places, the building's replacement exterior windows were historically accurate replicas, to preserve the structure's ornamental facade. Inside, the building was "fairly beat-up," adds Baker. "Bats and pigeons were living in the upper levels. Forklifts had been driven all over the wood floors." But the building's poured-in-place concrete structure was sound, and the raw warehouse space along with the wood floors, small floor plates, and abundant natural light provided "the perfect work environment for us," Baker says. "The character of the building matches HGA's culture: straightforward, open, nothing fussy or hidden."

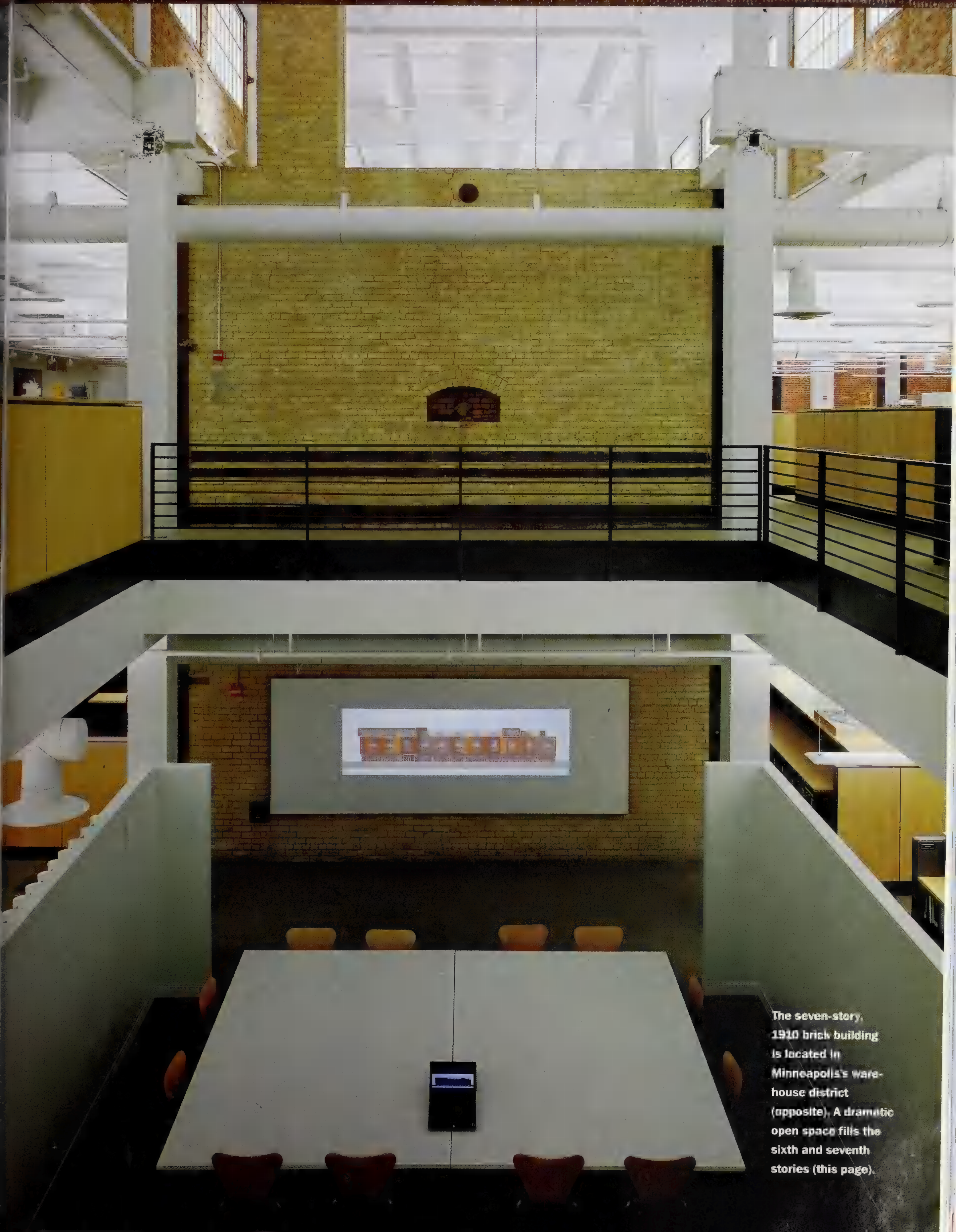
Editor of Architecture Minnesota, *Camille LeFevre writes frequently about architecture and design.*



Solution

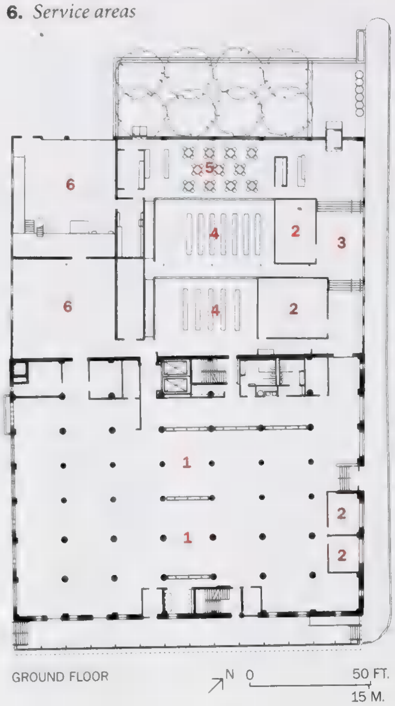
HGA retained the column-free, nonhistoric addition for the firm's commons and service area. Former loading-dock doors are now floor-to-ceiling windows in the dining area; the library is located on a new intermediate floor. The front entrance leads from reception up concrete stairs covered in reclaimed timbers, past two square glass conference rooms and into the original building. Windows along Washington Avenue display architectural models and allow passersby to see the space.

HGA gutted the historic build-



The seven-story, 1910 brick building is located in Minneapolis's warehouse district (opposite). A dramatic open space fills the sixth and seventh stories (this page).

1. *Studios*
2. *Conference rooms*
3. *Gallery*
4. *Library*
5. *Common areas*
6. *Service areas*



The front entrance leads from reception up stairs covered in reclaimed timbers into the original building (above). New open stairways with black-painted steel railings connect the second and third, and fourth and fifth, floors (below).

ing, kept the boilers, cleaned the brick, sandblasted the concrete ceilings and columns before painting them white, and refinished the wood floors. They converted the freight elevator on the south side into copy rooms, demarcated by the elevator's original metal sliding doors.

Core necessities like mechanicals, conference rooms, elevators, and rest rooms reside on the east side of each floor. Each level is divided into two zones that accommodate two to five project teams. Studios incorporate standard metal-framing systems, allowing teams to reconfigure shelves and display boards according to their needs.

In order to group workstations within the existing space—structural columns are 3 feet wide on the first level and narrow to 1 foot 8 inches by the seventh level—the architects modified a standard Teknion workstation. Cabinetry hangs from the spine, which houses power and data cables of the demountable system.

New open stairways with black-painted steel railings connect the second and third, and the fourth and fifth, floors. The drama of open space, however, occurs on the sixth and seventh stories, the latter of which is ringed with clerestory windows. Here, HGA removed six of the ovens, leaving 40-foot-high openings on either side of the remaining oven. The oven, of tan and glazed-white brick, is currently used for storing biscuit-company artifacts.

Commentary

With its 3-foot-thick brick walls and circular form, the oven has the imposing stature of a ruin in the midst of the architectural studio. Proposed future uses for the structure vary from a billiards room to an informal meeting space. At the very least, the oven represents HGA's hands-off approach to renovating the biscuit factory.

"You are not going to see tour-de-force design here," explains Tim Carl, AIA, design partner. "Our approach was about touching the building lightly, to bring back to life a historic structure. In the process, we found some cool marriages between our functional needs and existing qualities in the building." ■

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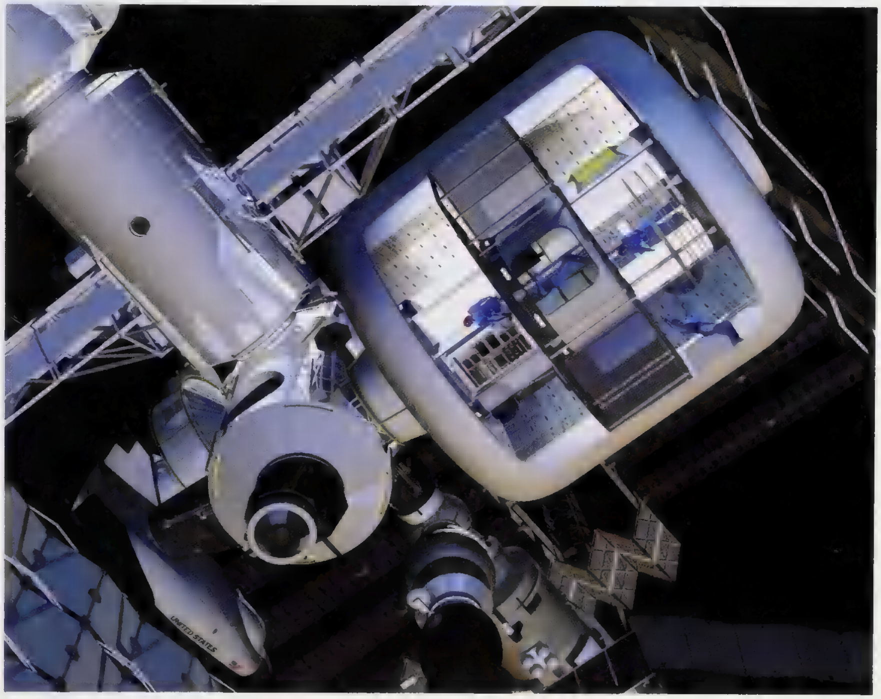
There Is No North Arrow in Outer Space

SPACE ARCHITECTURE IS ALREADY A BONA FIDE SPECIALTY WITHIN THE PROFESSION. ITS LESSONS WILL INFILTRATE THE MAINSTREAM, CHANGING THE WAY WE DESIGN, BUILD, AND ... THINK

By Sara Hart



Proposed TransHab Module as it would be attached to the orbiting International Space Station (ISS).

RENDERING: COURTESY OF NASA JOHNSON SPACE CENTER

Take away gravity, atmosphere, orientation, natural light, sound, and context, then add dangerous radiation, abrasive planetary dust, and orbital debris, and design and construction of habitable environments of any kind becomes baffling and disorienting. To be fair, living on the third rock from the sun requires that we obey the laws of physics, which govern, without exception, all the possibilities of sustaining life on Earth. Granted, since the Industrial Revolution technological advances have given us the mixed blessing of defying some of these laws. But it was the launch of Sputnik in 1957, and the fierce international competition it sparked, that inspired us to imagine living beyond the "surly bonds" of Earth and to apply our considerable ingenuity and will to make it inevitable.

Progress has been astonishing in just a few decades, as evidenced this October at the World Space Congress 2002 (WSC) in Houston. The WSC convenes only once every 10 years, but it is vast, with 20,000 participants from scores of nations. Hosted by the American Institute of Aeronautics and Astronautics (AIAA), one purpose of the nine-day Congress this year was to bring together scientists with engineers and architects to initiate collaboration for future Earth-based and interplanetary exploration.

The concept of an interdisciplinary approach to extraterrestrial design and construction prompted the AIAA Technical Subcommittee on Aerospace Architecture to organize the First Symposium on Space Architecture, a three-day event that preceded the WSC. Forty-seven architects, designers, and academics delivered dozens of papers covering a dizzying array of topics from the emerging aerospace curriculum for architecture students to the design of orbiting space hotels.

CONTINUING EDUCATION

CONTINUING EDUCATION AIA

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 159 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe how research and innovations for outer space are currently being used in architecture.*
2. *Explain how sustainability and life cycle will be different for structures in outer space.*
3. *Identify types of construction suitable for structures in outer space.*

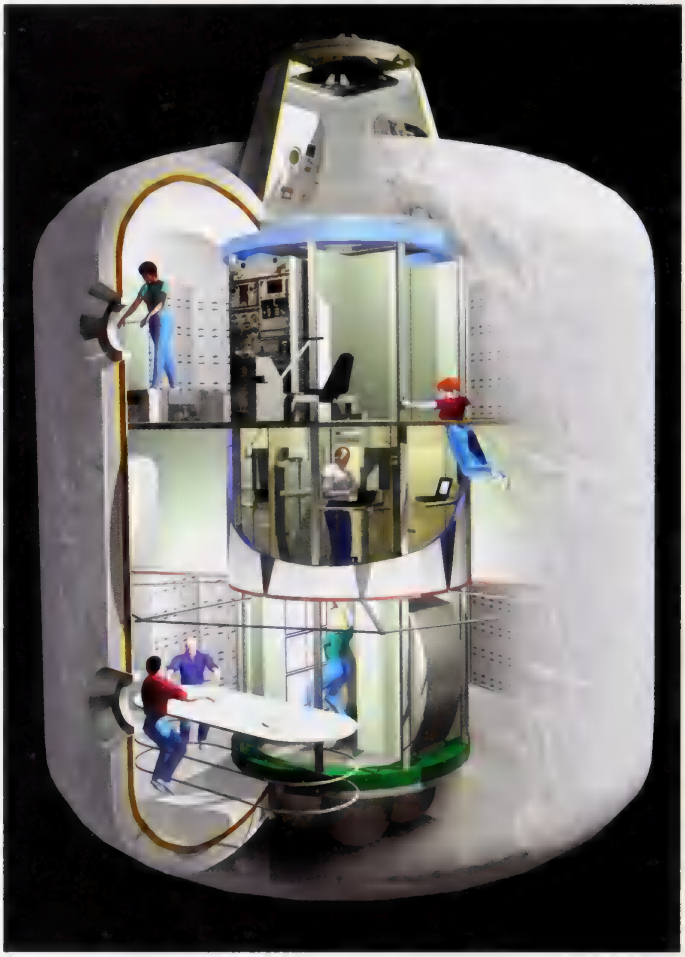
WWW For this story and more continuing education, as well as links to sources, white papers, and products, go to **architecturalrecord.com**.

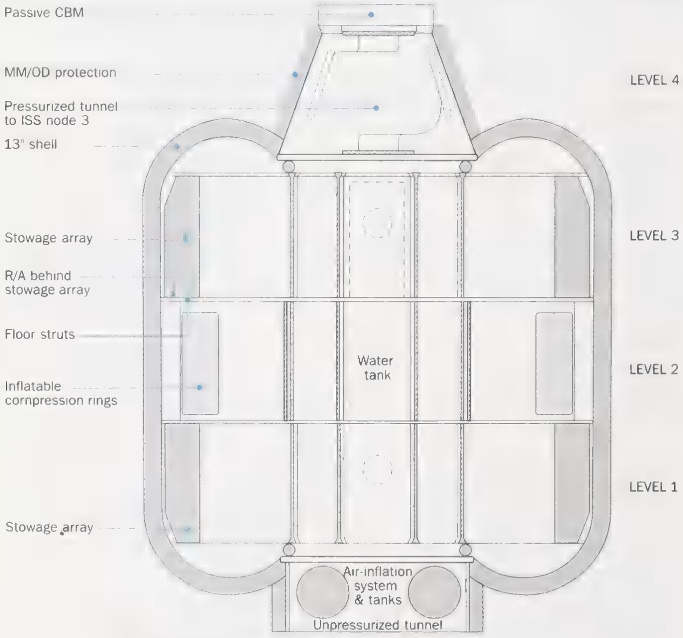
The symposium concluded with an all-day workshop in which participants, including students, conceived a philosophical foundation for the nascent field of space design and construction. Their product, dubbed "The Millennium Charter," is a manifesto for space architecture. The workshop organizer, Constance Adams, space architect and human factors engineer at Lockheed Martin Space Operations, says that the group chose as its model the 1928 *Congrès Internationaux d'Architecture Moderne* (CIAM), at which an international group of architects gathered to deflect criticism by certifying a bond between modern architecture—specifically the International Style—and a world in transition.

While conceding that space architecture is a rarefied specialty within the profession, the work under way at this moment should prompt earthbound architects to think outside the ozone in several areas.

Sustainability. In space, obsolete structures will be disassembled and their components reused. On Earth, buildings are typically demolished and dispatched to landfills.

Cost. In space, the lighter and more portable the load, the more economical the launch and deployment. On Earth, lighter is more eco-





ISS TRANSHAB SECTION

TransHab Module NASA architects and engineers designed a hybrid structure with a hard central core and an inflatable exterior shell (left). The architecture is optimized for flexibility (bottom left). Level I contains a galley/wardroom and soft stowage. Level 2 houses the crew's quarters and water tanks. Level 3 is for health care and soft stowage. Inflatable structures have been proposed for surface habitation on Mars and the moon (below).

nomical, but portability, whether in the form of manufactured components or prefabricated systems, remains a fledgling industry.

Life safety. In space, life safety literally means survival. Egress to the outside to escape fire or smoke is not an option. On Earth, life safety translates, in most building codes, to acceptable risk determined by a rating system for materials and assemblages.

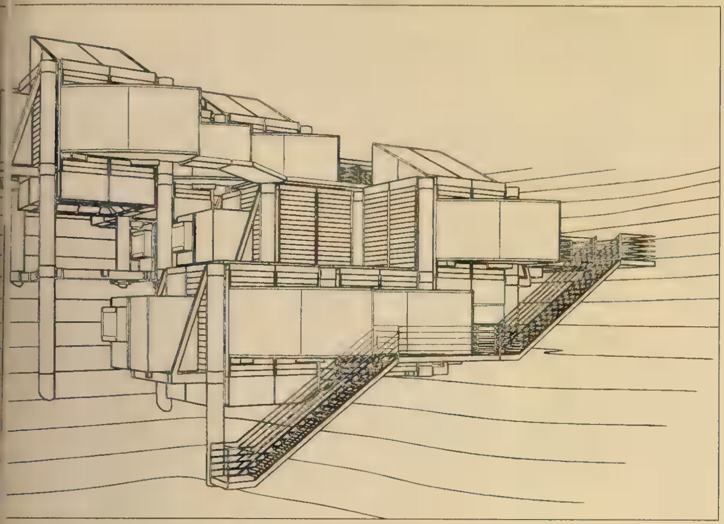
Life cycle. In space, because even routine maintenance can be logistically problematic, life-cycle issues are a major part of the design process. On Earth, besides attention to surface finishes and access to equipment, postoccupancy mitigation, as required, is the norm.

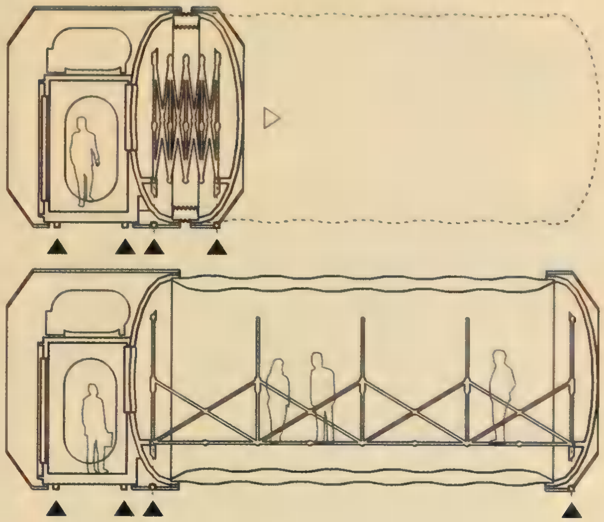
The Lego model: kit-of-parts theory

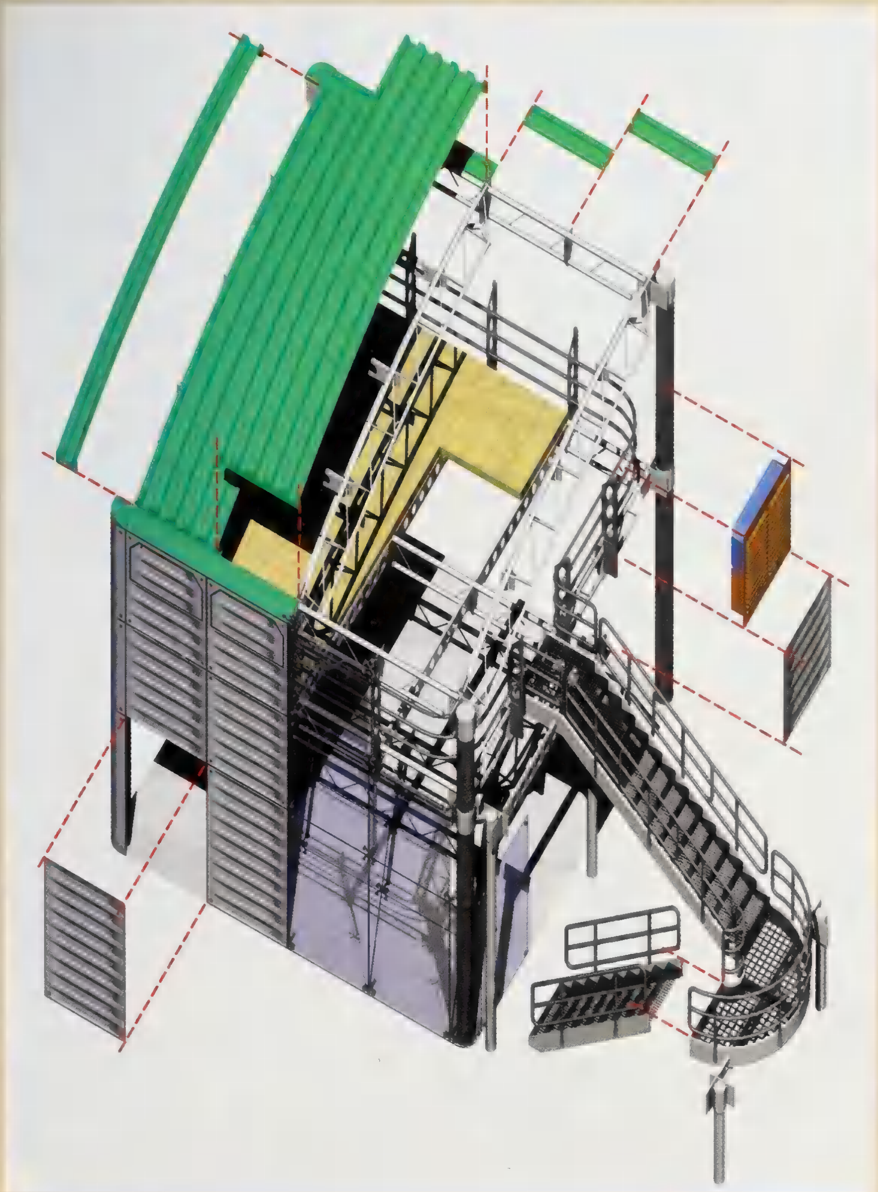
Think of an Erector Set or Lego creation as a scale model of the real thing, and you'll begin to understand the kit-of-parts theory of automated space construction. Architect Scott Howe has been developing this theory for 10 years, beginning at Kajima Corporation in Tokyo, then at the University of Oregon, and, most recently, at the University of Hong Kong. His goal is flexibility and efficiency of construction in orbital space and on planetary surfaces. Others are investigating modular construction, but Howe's research goes further to create a "kinematic architecture that includes mechanisms to construct itself or to change the configuration of the structure over its lifetime."

Nearly all buildings on Earth are erected in what Howe calls "final line" construction. Raw materials and tools are gathered on the site, and scores of laborers process the materials in a time-consuming and costly manner. This is not practical in outer space or even in extremely harsh Earth environments, such as polar regions and offshore or underwater sites.

Kit-of-parts construction is the next generation of prefabrication. Currently, most factory-made components are permanently joined on-site, which makes disassembly and reuse difficult or impossible. Howe's components have the capacity for disassembly and reuse indefinitely, and thus avoid the material degradation that is the inevitable result of recycling.

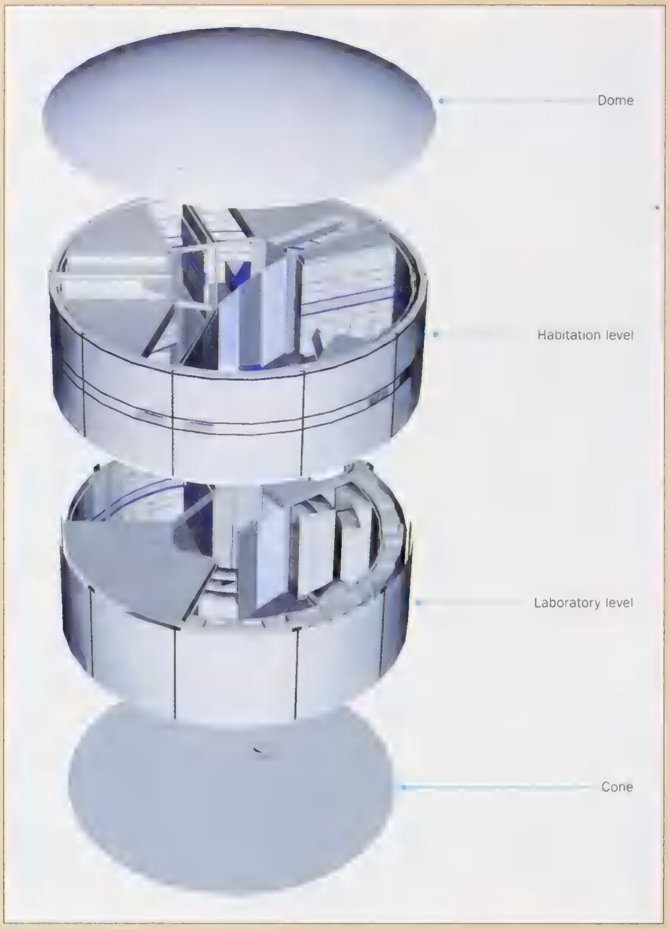






Kit-of-Parts Theory

Construction in an automated building system takes place at the assembly level, rather than the traditional raw-materials level (bottom). Assemblies are conceived according to increment, size, or shape grammar. In 1994, a universal kit-of-parts system was proposed to solve the Mormon Church's building shortage worldwide (above left). Power and communication lines are integrated into the joints, and assembly can be done by hand or with simple tools. The Mars Parametric Module (above) can be deployed by pulling apart two hard-shell end domes until the interior box truss snaps into place. All circulation, power, and data connections are located in the connector node.



The Munich Model **Students at the University of Munich designed a Mars Mission Habitation Module using computer simulations, scale models, and full-scale mock-ups of sections. Light studies of crew quarters show an array of configurations. The bed and tables are foldable for spatial flexibility. An aluminum model (right) shows connected FLOW tables inside the module.**

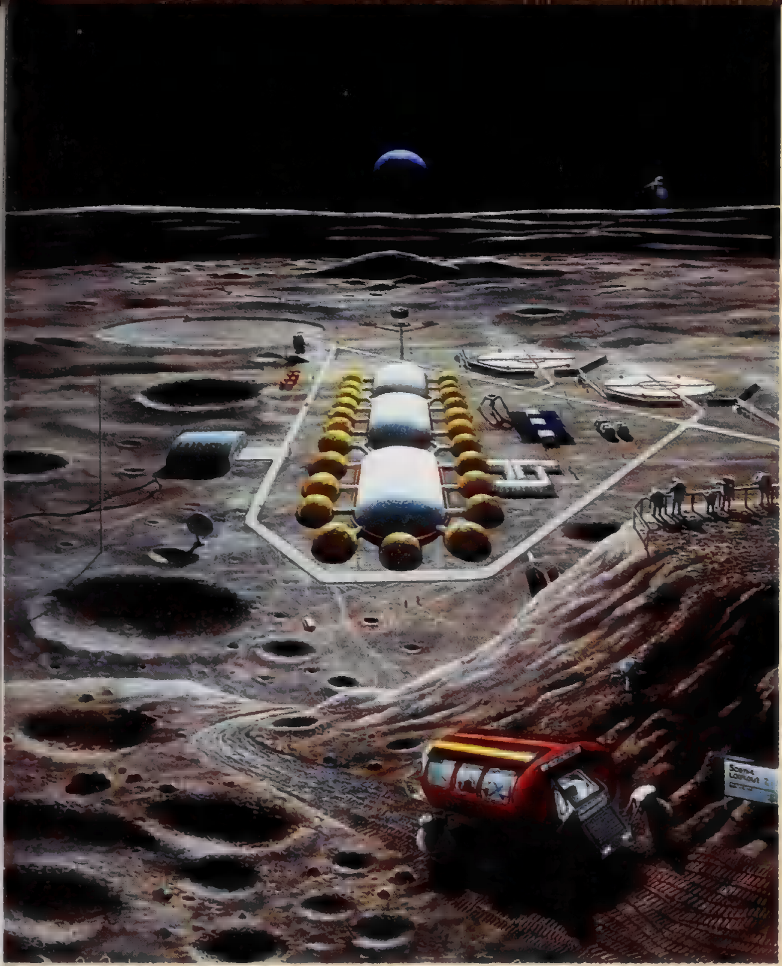
The architect creates a parts library, which includes every major building assembly. The assemblies are conceived systematically by size or shape grammar in easily manufactured components. Standard connections are carefully designed to allow for the maximum number of configurations. This approach produces object-oriented building techniques, which Howe categorizes as four construction systems: joint-based, panel-based, module-based, and deployable.

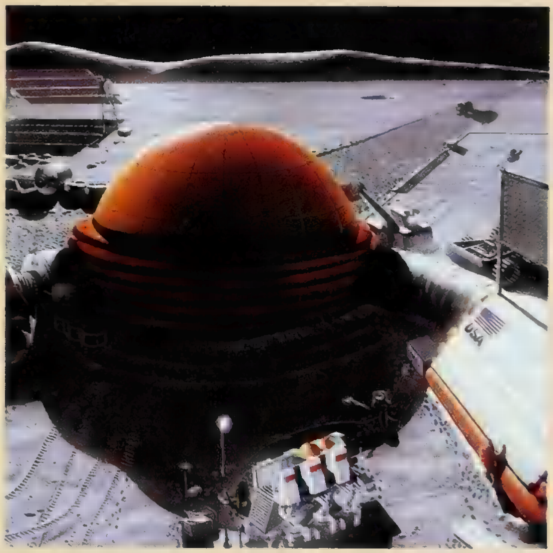
Joint-based emphasizes design of connections in order to speed erection time. High-end panel-based systems are one-piece wall or floor assemblies that have specially designed fasteners along the edges to make connections fast and easy. Since the panels act as both structure and cladding, gaskets and weatherproofing devices are built-in. Whereas weatherproofing is a priority in Earth-based design and construction, in space, its performance is critical to survival. Howe singles out Norman Foster's 1983 Renault Distribution Center as a brilliant example of a joint-based/panel-based hybrid. Designed for future expansion, the warehouse is made of linear members designed to optimize tension and compression forces. Panel-based cladding is set away from the structure with simple, single-point mounting hardware.

Perhaps the category familiar to most is the deployable system. This system consists of folding trusses, swing-open modules, and inflatable structures. Their advantage lies in the fact that they are compact, lightweight, and can be collapsed or expanded as program needs change. The Transit Habitat Module (TransHab), designed by NASA for the International Space Station (ISS), is an exellent example of a deployable structure.

Whereas research will eventually deliver the total construction automation that Howe and his colleagues are developing, current construction methods rely on incremental improvements in which new automation tools and techniques are applied to traditional construction methods. According to Howe, there are three main areas in which automated construction systems have been fully implemented, although they do not yet represent a major change in the construction industry.

The first group consists of function-specific robots that are used on manned construction sites where repetition, labor, or safety concerns justify their use. The second group includes a stationary on-site factory that delivers prefabricated building components to a robotic system, which assembles one floor at a time. The floors are jacked up into place, beginning with the top floor and moving down. In the third category, a building's structural core is built conventionally to the height of a few





Architecture Tomorrow

Based on lessons learned from the Apollo Lunar Module, designers have been developing groundbreaking pressurized vessels for the Moon and Mars, including prefabricated inflatable structures (above) and large planetary bases (left) assembled or constructed in-situ. Smart structures will detect, analyze, and repair any structural failures. Design solutions will include new lightweight and high-strength materials.

stories. A platform the size of the designed floor plate is constructed on top of the core. Here, a factory is established that first assembles the entire ground floor and then jacks itself up from the core to complete the next level, and so on. Automated lifts within the core deliver prefabricated components to the platform factory. When the building is topped out, the factory is disassembled and removed.

In the meantime, with automation gaining ground, the earthbound architect who has mastered the principles of statics in order to design a building that will stand up will soon need to have a basic knowledge of kinematic principles in order to design to the complex behavior of robotics, placement and performance of sensors and actuators, and their integration into building components. Finally, Howe highly recommends that any architect who is serious about design with a robust, flexible kit of parts, should study the Lego system, especially the Mindstorms and Technic series with robotic capabilites.

The kit-of-parts theory was instrumental in the design and deployment of the ISS. Kriss Kennedy is a space architect at NASA's Johnson Space Center in Houston. He was architect and systems engineering and integration lead for the design of TransHab, which was originally conceived to be a vehicle to transport people to and from Mars, but most recently was developed as a habitation module for the ISS, which has been in orbit, 220 nautical miles above Earth, with rotating crews since 2000.

The design team sought an alternative to traditional aluminum-shell architecture and developed TransHab as a hybrid structure—an inflatable fabric shell with a hard central structural core. (NASA has experimented with tensile fabric structures since the 1960s and has successfully tested several fabric structures. But when the textile industry came up with durable products such as Kevlar, Vectran, and Polybenzoxzzole [POB], NASA's investigations intensified.)

According to Kennedy, "The spacecraft represents breakthroughs in the design of flexible, high-load, composite structures in the development of an optimized, independent pressure shell (using breakthroughs in inflatable and shielding technologies), and in the application of both systems in a single, reconfigurable habitat." In essence, the result has all the packaging efficiencies of an inflatable structure with the advantages of a hard, load-bearing core, or, in other words, a reversal of the common exoskeleton structure to a more flexible endoskeleton one.

The hard core is designed for ultimate flexibility. It bears the shear loading at launch. According to Kennedy, once in orbit, the core can be reduced to a tensile stabilizer by removing the internal trusswork and using the truss components as interior framing and outfitting elements. The truss is made of modular, graphite-composite shelf units with universal attachments so the entire system can be reconfigured for different functions.

The inflatable shell is a spectacular innovation. Created out of about two dozen layers, it is folded and compressed around the core at launch and inflated and deployed in orbit. The layers fall into four types. The innermost layer is made of Nomex, a fireproof material that also acts as a scuff and scratch barrier. Air is contained by three pressure bladders made of Combitherm, a material used in the food-packing industry. A structural restraint layer of woven Kevlar maintains the module's shape. Successive layers of Nextel (commonly used as insulation under car hoods) and open cell foam make up an orbital debris shield. Space debris and small meteorites shatter when they hit the shield, losing energy as they penetrate the layers. Finally, an external thermal-protection blanket insulates the module from temperatures that can range from 250 degrees Fahrenheit in the sun to minus 200 degrees in the shade.

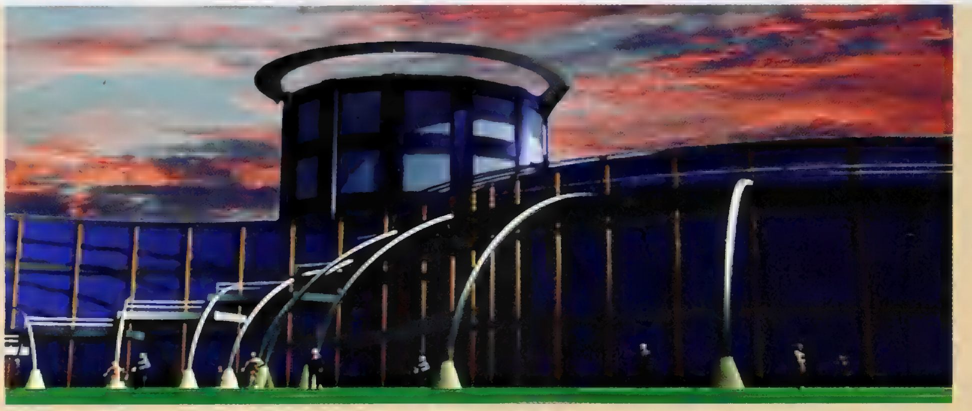
Kennedy learned that the key to the successful application of unproven technologies rests squarely on what is often called the "spiral approach" to engineering. Great technical and managerial benefits come to those who "build a little and then test, evaluate, and learn. Incorporate what you learn as the design matures." With successful hypervelocity-impact testing and other shell development tests, TransHab proved to meet or exceed all the requirements for application in space. Although the U.S. Congress cancelled the project, lessons learned from TransHab are invaluable, especially the innovative endoskeletal technology, which will have many applications on Earth.

Education: learning by doing

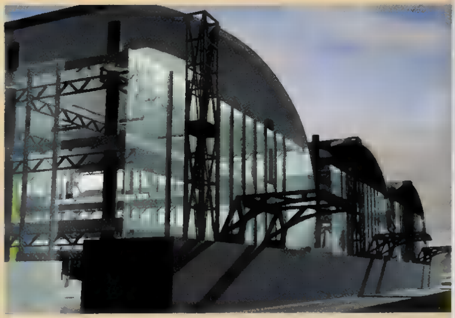
As shown by the complexity of the research projects viewed here, it's obvious that tomorrow's space architect will be a specialist with extensive interdisciplinary knowledge and skills, an inevitability not lost on the symposium participants. As Constance Adams, workshop leader, stressed in her preamble to the Millennium Charter, space architecture expands the role of terrestrial architects. "Design for space requires specialized knowledge of orbital mechanics, propulsion, weightlessness, hard vacuum, and the psychology of hermetic environments," she says, as well as tertiary understanding of medicine, law, and transportation design, to name a few. Because those who teach are often space architects themselves—the "learning by doing" approach so crucial in both commercial and federally sponsored space research—students are indoctrinated with the "hands-on" methodology of learning.

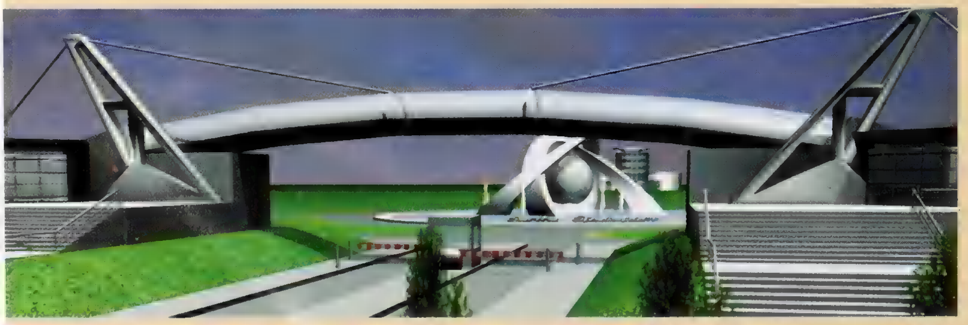
The Sasakawa International Center for Space Architecture (SICSA) is a research, design, and teaching component with the University of Houston's Gerald D. Hines College of Architecture. Besides offering programs to advance space technologies, SICSA pursues planning and design for difficult and extreme environments on Earth. Students benefit from proximity to the Johnson Space Center, local aerospace companies, research institutions, and other commercial technology companies in the area.

Professor Larry Bell, director of SICSA, describes the center's mission as twofold. The lessons from the classroom concentrate on Earth challenges: energy conservation, materials science, construction systems, and human performance in extreme environments. Upper-level undergraduates pursue Earth-based projects that pose special technical and



Texas Spaceport
The Sasakawa International Center for Space Architecture (SICSA) at the University of Houston is providing design support for a commercial spaceport in Texas. Schematics show several proposed facilities, including operations and control (above), security (below), and servicing (right). The spaceport will support the operation of advanced reusable launch vehicles for commercial exploration.





environmental challenges and emphasize practical, yet innovative, solutions. Graduate students can specialize in space architecture within the master of architecture program. SICSA maintains a Closed Environment Laboratory, the size of a habitable space station. Students study relationships between physical design features and the abilities of inhabitants to adapt and perform on Antarctic bases, offshore and underwater habitats, and housing for people displaced by natural or man-made disasters.

The second initiative is commercial. SICSA is providing master planning and design support to support the Texas Aerospace Commission to promote the development of a commercial spaceport in Texas. The theory is that advances in propulsion systems and reusable launch vehicles will reduce the costs of space exploration. Conceptualization of a broad, integrated infrastructure of facilities is under way.

One need not live in the shadow of NASA to study space architecture. In 1998, two programs in space architecture were created at the Institute for Architecture and Product Development at the University of Technology Munich. The first, led by British architect Richard Horden, studied the microgravity (weightlessness) environment by making proposals for the ISS Habitation Module, which ended in building and testing prototypes for microgravity furniture. The other studied a surface habitat for the NASA Mars Reference Mission. Professor Andreas Vogler described these programs as the initial step toward developing a curriculum for space architecture within the standard architecture curriculum. "Modern architecture and product development mean problem solving not only in complex technical systems but also in complex working environments," explains Vogler. "Dealing with complex systems on both the technical and logistic side is inherent to the profession."

In short, "The Munich Model," as described by Vogler, concentrates on systems thinking to produce technical feasibility and achieves this through a "learning by doing" approach, which, in turn, requires access to resources outside the university, from government agencies and private industry.

The goal of the ISS Habitation Module was "to design technically viable proposals for all living functions on the ISS," explains Vogler. Through videoconferencing with NASA, students learned about how astronauts move in microgravity and handle objects. And with the help of the Munich aerospace company Kayser-Threde, students built models at 1:6 scale using a puppet to simulate ingress, egress, and reach.

After three months of design, the students traveled to the Johnson Space Center in Houston and presented their proposals. Impressed, NASA officials offered to test their designs on the KC-135 (a turbojet transport that flies parabolic arcs to produce weightless periods of 20 to 25 seconds), provided the students could build a prototype of their Flexible On-Orbit Workstation (FLOW) with integrated seat restraint and space shower—in four months. As the students found out, learning by doing is a long leap from investigations with computers or scale models. They raised money, lured local aerospace experts into service, and made the prototypes that they successfully tested on the KC-135.

If the intellectual rigor exhibited at the Houston symposium is any indication, the space architect will be this century's version of the Renaissance's artist-cum-scientist. There is much to be imagined, discovered, and invented. The work shown here represents a small percentage of the effort going on all over the world. More will be revealed on the ARCHITECTURAL RECORD Web site. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "There Is No North Arrow in Outer Space" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 240).**
- **Fill out and submit the AIA/CES education reporting form (page 240) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. Which is not currently used in "final line" construction?
  a. raw materials are gathered on the site
  b. laborers process materials in a time-consuming manner
  c. components are permanently joined on-site
  d. components have the capacity for reuse indefinitely

2. Which is not part of the kit-of-parts theory of automated space construction?
  a. efficiency of construction
  b. components are permanently joined on-site
  c. components are prefabricated
  d. connections are designed for many configurations

3. Joint-based construction emphasizes which of the following?
  a. flexible joints
  b. connections designed for maximum configurations
  c. connections designed to speed erection time
  d. weatherproofed joints

4. The advantages of deployable systems include all except which?
  a. they are compact
  b. they are lightweight
  c. they can change as the program requires
  d. they are reusable

5. Where are function-specific robots used?
  a. where there is little oxygen
  b. where repetition is needed
  c. where people cannot go
  d. where the weather is extreme

6. A stationary on-site factory does which?
  a. delivers building components to laborers
  b. delivers prefabricated components to a robotic system
  c. assembles floors from the ground floor up
  d. builds a structural core

7. The hybrid structure of TransHab uses which type of structure?
  a. endoskeleton structure
  b. exoskeleton structure
  c. inflatable structure
  d. aluminum-shell structure

8. Which is an advantage of the hard core of TransHab?
  a. it becomes inflated after launch
  b. it helps to steer the load at launch
  c. the core can be reconfigured after launch
  d. it aids in centrifugal rotation after launch

9. TransHab's shell consists of all except which in its layers?
  a. Nomex
  b. air
  c. Kevlar
  d. hydrogen

10. Which describes the difference between sustainability on Earth and sustainability in outer space?
  a. on Earth, lighter is more economical
  b. in space, life safety literally means survival
  c. on Earth, postoccupancy mitigation is normal
  d. on Earth, buildings are typically demolished and discarded in landfills

WHERE WE STAND

AIA Third Quarter Financial Results

To AIA members,

As we approach the end of 2002, we look forward to achieving the Board's financial goal of $3.5 million in net assets a full year in advance of our three-year target. Here are the highlights of the financial results for the third quarter of this year.

Total Net Income Stronger Than Forecast

Total revenue through September is under plan by $506,000 as a result of lower than expected income from meetings. However, total expenses for the first nine months of 2002 are under plan as well, by $779,000, due to a reduction in overall meeting expenses and lower than expected health care claims. The result is that total net income for the first three quarters of 2002 stands at $6.8 million, 5.1 percent ahead of budget goal.

Approaching A Turning Point

Continued fiscal diligence will pay off in greater value to our 70,000 members in 2003. Our national component staff, enabled by recent administrative realignment, will be prepared for greater focus on members' needs and goals. More management energy will be available to work on the strategic tasks of making the national component a better partner to state and local components and representing the profession to the industry and marketplace. As we approach the end of this third consecutive year of fiscal stability and asset growth, I want to thank you for your patience and as always, I welcome your comments.

Sincerely,

Norman L. Koonce, FAIA
Executive Vice President/Chief Executive Officer

AIA Financial Results September 2002 ($000's)

	YTD September Budget	**YTD September Actual**
Revenue	$33,285	$32,779
Operating Expense	(26,710)	(25,931)
Operating Net Income	**6,575**	**6,848**
Non-Operating Income	154	142
Unrestricted Net Income	**6,729**	**6,990**
Restricted Expense	(205)	(136)
Total Net Income	**$6,524**	**$6,854**

THE AMERICAN INSTITUTE OF ARCHITECTS

The Vinyl Institute

Courtesy of Mannington Commercial, Calhoun, Ga

Courtesy of York Wallcoverings, York, Pa

THE VINYL INSTITUTE PRESENTS

VINYL BY DESIGN:

Creating Interior Spaces That Stand the Test of Time

Increasingly, CEOs and company leaders are recognizing the importance of good building design as a strategic element in their businesses – something designers and architects have long appreciated. The creation of a well-esigned, successful interior space is dependent upon the use of appropriate aterials, with a full understanding of how those materials will perform once put into service.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION Series

se the learning objectives below to focus your dy as you read **VINYL BY DESIGN: eating Interior Spaces That Stand e Test of Time**. To earn one AIA/CES arning Unit including one hour of health safety lfare credit, answer the questions on page 165, en follow the reporting instructions on page 240 go to the Continuing Education section on *ww.architecturalrecord.com* and follow the porting instructions.

earning Objectives

- Understand the performance attributes of vinyl interior products and standards applicable to ensure performance
- Manage design liability by correctly specifying vinyl flooring and wallcoverings
- See how the history and invention of new materials led to the use of vinyl flooring and wallcoverings today.

Vinyl, used as an interior material, combines aspects of traditional materials with advanced technologies and ongoing innovation that give it versatility, durability and beauty in many applications. As with products of any material, client satisfaction with the selection of vinyl products requires knowledge of the characteristics that can deliver particular performance attributes, but also proper specification and a commitment to ensuring that qualified installers deliver the workmanship on which that performance depends.

This continuing education section examines two applications in which vinyl can be an appropriate design solution for interior spaces – flooring and wallcovering. Discussion of each vinyl application offers guidance on design and specification that can help to ensure the product performs as expected while protecting design intent and reducing exposure to design liability.

VINYL FLOORING

Vinyl flooring is in a category frequently referred to as "resilient" because it characteristically "bounces back" from the weight of objects that compress its surface. While vinyl flooring is available for residential applications, this article primarily addresses the two basic types of commercial flooring: sheet vinyl flooring and tile, either solid vinyl or vinyl composition tile (VCT).

Every flooring formulation is different and most are proprietary. In general, vinyl flooring is made of vinyl resin and additives, including plasticizers, used to soften the vinyl and provide flexibility; stabilizers, which minimize degradation and discoloration from heat and light; pigments; and fillers such as limestone and clay.

Performance Characteristics

A floor's durability is rated against a number of standards related to traffic wear. These standards measure such criteria as resistance to abrasion, gouging, punctures, cuts and impacts; how dynamic and static loads affect the life of the floor; how color is affected by heat and light exposure; and resistance to chemical exposure.

Because each type of vinyl flooring has its own performance characteristics and benefits, demands of the location will dictate which type to specify. Sheet flooring is widely regarded as the easiest to clean and, because its seams can be heat-welded, is appropriate in areas that must be kept sterile. [See ASTM F1516-94, "Standard Practice for Sealing Seams of Resilient Flooring Products by the Heat Weld Method (when Recommended)"].

Specialized types of vinyl flooring also can solve specific design problems – such as slip-resistance in a ramped corridor, or static dissipation where sensitive electronic equipment is in use. Check with the manufacturer to address performance demands for locations where the floor will be subjected to heavy rolling loads, such as wheeled carts, gurneys or dollies, or where heavy stationary objects such as furniture and equipment will remain on the floor in a fixed position for a long time. Manufacturers can provide standard test results measuring the load limit to which their products can be subjected for an extended period of time with no permanent indentation after the load is removed.

Substrate Preparation

Vinyl flooring can be installed over many different surfaces, including concrete, wood, terrazzo and, in some cases, existing vinyl floors. The quality and preparation of the substrate are critical to a successful installation. The substrate must provide a smooth surface and all finishes, waxes and surface contamination must be removed to ensure that the new floor adheres properly. In some cases, a specific substrate such as concrete is necessary to provide a suitable surface.

Flooring failures in many instances are caused by moisture emitted from the substrate. If moisture migration is not dealt with, it can result in deterioration of the flooring adhesive; bumps, ridges or bubbles under the flooring; color changes; peaking, curling or warping of flooring; and mineral salt build-up. Check with the flooring manufacturer to determine which moisture test should be specified before installation, based on the substrate. For installation on a concrete subfloor, the calcium chloride moisture test (ASTM F1869-98 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride") is recommended.

Moisture Control

Even if new concrete is allowed to cure and dry to the point where flooring can properly be installed, the absence or improper installation of a vapor retarder under the floor slab can lead to expensive failures later. Research into moisture-related flooring failures has shown a high correlation between the severity of the failure and the absence of a vapor retarder. A vapor retarder controls condensation and limits the migration of water vapor through the floor. Careful placement and sealing of vapor retarder materials is essential to ensure effective moisture control. Special care must be taken not to perforate the membrane, as this will limit its effectiveness and can result in failure at the time of installation.

Adhesion

In general, vinyl flooring should be installed at a room temperature of not less than 65 F (18.3 C) and no greater than 85 F (29.4 C). This temperature should be maintained for at least 48 hours previous to installation, during installation and 48 hours after installation or until the flooring has become thoroughly bonded to the subfloor. Vinyl tiles should be brought to room temperature prior to installation. In cold weather conditions, flooring should be stored in a warm room for at least 48 hours before installation. In addition, the room should be well ventilated.

After installation of both tile and sheet, rolling loads and heavy foot traffic should be avoided until the adhesive sets hard, approximately 48 hours. Plywood or hardboard panels should be used when moving furniture, appliances or equipment onto a recently installed vinyl floor. Rests, glides or casters are recommended for permanent use under heavy furniture and equipment.

Vinyl sheet flooring products such as Mannington Assurance provide a wear surface that helps prevent slip and falls. (Photo courtesy of Mannington Commercial, Calhoun, Ga.)

Slip Resistance

Specifying the appropriate floor surface can play a significant role in preventing slips and falls, which can result in severe injuries, workers' compensation claims, lost productivity and lawsuits.

The slip resistance of a floor's surface is measured by its Static Coefficient of Friction (SCOF); i.e., the higher the SCOF, the less slippery the surface. However, floors with a very high SCOF may cause tripping. Friction is the resisting force between two surfaces rubbing against each other, and the coefficient of friction is the ratio of the limiting friction to the normal reaction between the sliding surfaces. The coefficient of friction is constant for a given pair of surfaces. Too little friction can cause a person to lose "grip," become off-balance and fall.

The Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities, recommends a SCOF of not less than 0.6 for level surfaces and 0.8 for ramped surfaces. These are advisory, not mandatory, recommendations and do not specify a test methodology. (Source: Section 09651 – "Resilient Floor Tile," and Section 09652 – "Sheet Vinyl Floor Coverings," Evaluation Sheets, supporting documents for AIA's MASTERSPEC®, published by ARCOM.) In part, this is because of disagreement about the repeatability or reproducibility of test results, which has led to questions about the significance of SCOF test results, particularly under wet conditions.

Manufacturers recommend flooring with enhanced slip resistance for areas such as ramps, shower and locker rooms, as well as areas with high humidity. These products are available in both sheet and tile, with abrasives in the material or a raised profile. While flooring with a raised profile is appropriate in high traffic areas where enhanced slip resistance is needed, it is potentially more difficult to clean than smooth surfaces and not ideal for areas requiring infection control. Check with the manufacturer for the product best suited to the specific demands.

Maintenance to Prevent Slips and Falls

Building owners should be made aware that vinyl flooring, like other types of smooth floors, can become slippery when wet. Thus it is important to maintain vinyl floors in a clean and dry condition. After washing, vinyl floors should be allowed to dry thoroughly and any wet areas from spills, foreign substances or tracked-in moisture should be wiped up immediately.

In addition, it is important that the owner protect the floor from certain foreign materials that, when spilled, can make the flooring more slippery. Specifiers can address some of these concerns by providing detailed recommendations for appropriate maintenance in the Owner's and Maintenance Manual. For example, furniture polishes containing silicone can cause slippery conditions when they come in contact with a vinyl floor, so it is important to protect the floor if these products are used. Mop treatments with petroleum solvents or silicone compounds should be avoided as they, too, can cause slippery conditions. Check with the manufacturer for more details for specific vinyl flooring products.

Stain/Chemical Resistance

All commercial resilient floors require continuing maintenance. Before specifying the flooring material, consider what types of substances might come in contact with the floor.

Vinyl is generally resistant to alkalis, acids, alcohols, oils, greases and aliphatic hydrocarbons. It can be softened by ketones, esters, and chlorinated and aromatic hydrocarbons. Some rubber materials, such as rug backings and car tires, can cause staining. Manufacturers can provide test results for a variety of chemicals and reagents on individual product lines. In general, be sure the building owner is well-informed about floor use and maintenance issues.

WALLCOVERING

Contract – or commercial – wallcoverings are produced specifically for use in hospitality and healthcare, schools and institutional settings, apartment and office buildings, and retail establishments. Federal guidelines (see Technical Assistance sidebar) have been established for flammability, tear strength, abrasion resistance, washability, scrubbability and stain resistance. While the decorative surface draws the most attention, the total composition of the substrate, including the backing, determines how well the wallcovering will perform in such critical areas as strength, durability and cleanability.

Categories

Most contract wallcoverings on the market today are fabric-backed vinyl wallcoverings, which have a woven fabric or a non-woven synthetic substrate laminated to a solid vinyl decorative surface.

Fabric-backed vinyls are available in three weights, as described in federal specifications (FS CCC-W-408D, Wallcovering Vinyl-Coated) and in standards established by the Chemical Fabrics and Film Association, Inc. (CFFA), Specification 101D:

- ***Type I, Light Duty***: For areas subject to minimal scuffing and abrasion, such as above chair rails in hotel guest rooms and office buildings.
- ***Type II, Medium Duty***: For areas where traffic and scuffing are major issues, such as foyers, lounges, corridors and classrooms.
- ***Type III, Heavy Duty***: Primarily used as lower wall protection for areas exposed to heavy traffic by movable equipment or rough abrasion, such as hospital corridors, storage and utility rooms, food service areas and elevator lobbies.

For added protection, complete wall systems are recommended, including chair rails, bumper guards, crash rails, rigid wall panel protection and corner guards.

Surface Preparation

The Wallcoverings Association estimates that more than 90 percent of wallcovering failures are due to poor surface preparation. With proper preparation, contract wallcovering can be successfully installed on nearly any type of wall surface, including drywall, plaster, paint, masonry, paneling, and walls where old wallcovering has been removed.

Wall protection systems such as Koroseal® Traffic Patterns protect walls in areas exposed to heavy traffic, where marring and scuffing are a problem. (Photo courtesy of RJF International Corporation)

The wall surface must be clean, dry and structurally sound. Any irregularities should be repaired and stains removed that might bleed through. Loose paint also must be removed and glossy or semi-gloss paint sanded to a dull finish. In addition, the wall must be dry and any source of moisture that may promote mold or mildew growth must be eliminated. To ensure that the adhesives will adhere properly, most surfaces require a primer/sealer – usually a water-based acrylic product specifically designed as a primer for wallcovering.

Adhesion

Selection of the appropriate adhesive for a commercial installation will depend on the weight and backing of the wallcovering and the surface to which it will be applied. Some of the most popular are premixed vinyl adhesives, either clear or clay-based. Specialty adhesives are needed when vinyl is applied over vinyl, such as when a border is pasted over wallcovering.

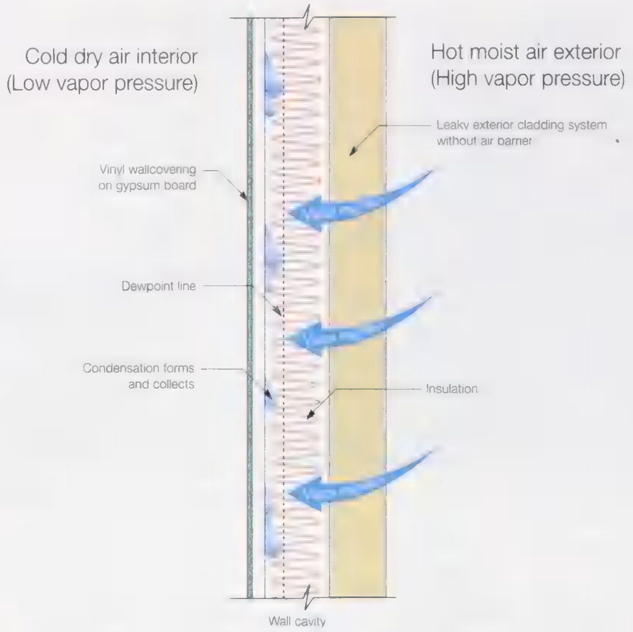
Indoor Air Quality

In recent years, one of the most significant issues for interior product specification has been the quality of the indoor air. Because vinyl wallcoverings are so easy to clean, they make it easy to remove sources of known allergens, thereby improving indoor air quality.

Like many interior products, vinyl wallcoverings may have an initial odor when newly installed. This odor results from adhesives, printing inks and additives that give the vinyl its particular performance attributes.

Often, complaints from building occupants about irritation and odor are associated with volatile organic compounds (VOCs). These compounds can originate from many sources, including cleaning solutions and interior materials. To reduce exposure to VOCs, check with the manufacturer for low-emitting and low-odor products.

Good ventilation is also critical for good indoor air quality. Ventilating with up to 100 percent outside air can reduce the initial period of emissions. Information on "airing out" times published in the product literature should always be observed. Tests by independent laboratories have shown that, with adequate ventilation, the initial odor in vinyl wallcoverings will dissipate much faster than the odors of most paints.



Condensation behind vinyl wallcovering in hot humid climates is caused by design details and construction which leak moist air and water. Design and specify tight construction and use an air barrier where appropriate. Consider the use of perforated vinyls. The objective is to keep warm, moist air from reaching the back side of the cold wallcovering, avoiding condensation and possible mold and mildew growth.

Mold and Mildew

Mold and mildew are forms of fungus that can grow anywhere the conditions are right – i.e., spores, moisture, warmth and a food source must all be present. Where vinyl wallcovering is used, care should be taken to prevent condensation from occurring inside exterior walls.

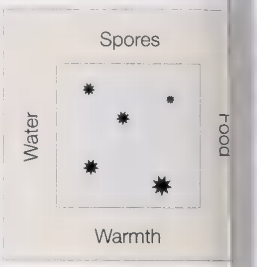
If a vapor retarder is not present, condensation can occur within the wall whenever warm moist air contacts a surface or temperature zone cooler than the dew point of the air – as might be expected on the cold surface of wallboard in an air-conditioned building in a hot, humid climate. Because mold, mildew and other common types of fungus thrive in damp, dark, poorly ventilated places, they can grow behind any wallcovering – including vinyl, a non-porous material. In effect, moisture is trapped inside the wall cavity, where spores can feed on the paper-faced gypsum board or even the wallcovering adhesive. It is important to note that the problem is caused by moisture, not the vinyl wallcovering.

One way manufacturers of vinyl wallcoverings have addressed moisture-inherent areas is with "microvented" products that allow moisture trapped behind a covered surface to escape into the room. (Many vinyl wallcoverings can be microvented after manufacture, but extra time must be allowed for this additional process.) Mildew-resistant adhesives also help protect against the growth of mold and mildew. In all cases, the cause of the moisture must be identified and remediated or removed.

Specifiers who are concerned about the use of vinyl on exterior walls where condensation may be an issue should contact the wallcovering manufacturer.

Fire Performance

To provide building occupants with time to escape in case of a fire, building codes and other regulations set standards for combustibility and surface burning characteristics of building materials. Several independent third-party testing laboratories classify vinyl wallcoverings based on flame spread and smoke developed in fire testing. These fire performance classifications are based on ASTM E84, "Standard Test Method for Surface Burning Characteristics of Building Materials," using the Steiner tunnel test methodology, or NFPA 286, "Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Wall and Ceiling Interior Finish," using the corner burn test.



All four elements are necessary for mold and mildew to proliferate. (Courtesy of CFFA)

Most vinyl wallcoverings meet "Class A" standards – the highest standard – meaning they can safely be specified throughout the building's interior, including in corridors and areas near exits. (Standards set by CFFA W-101-D describe Class A as having a flame spread index of 0-25 inclusive and smoke development of 0-50 inclusive. Class B has a flame spread index of 26-75 inclusive and smoke development of 0-100 inclusive, based on the ASTM E84 test method.) Materials that meet the requirements of NFPA 101®-Life Safety Code®, Section 10.2.3.5.3, when tested under NFPA 286, are exempt.

Flexible vinyl building products are produced from an inherently fire-resistant polymer and many include additives to further improve their fire performance. In general, vinyl wallcovering is slow to catch fire, its flame sprea is slow and it ceases to burn after the flame source is removed.

The growing presence of synthetic materials – including vinyl wallcoverings – has sometimes incorrectly been blamed for creating a more lethal fire environment. In actuality, the U.S. fire death rate has steadily decreased since the time when most construction and decorative products were made of "natural" materials. The dramatic decrease in fire deaths over the last several decades is attributable to improved fire codes, better fire suppression systems and the increased use of fire-resistant materials like vinyl. The combustion by-products of vinyl are no more hazardous than those of other commonly used building materials.

However, applying new vinyl wallcovering over existing vinyl wallcovering diminishes overall fire performance by increasing the fuel load in the event of a fire. Manufacturers recommend removal of existing wallcoverings prior to installing new ones in order to meet fire performance standards. In addition, this helps ensure an overall successful installation with proper adhesion and no translation of old materials through the new.

SUMMARY

Managing design liability, avoiding risk and providing successful buildings are founded upon a conscious awareness of many important details. A key component of a designer's professionalism is understanding potential problems before they occur and proactively specifying the solutions to them.

Familiarity with the inherent characteristics of any building material, along with the performance capabilities of specifiable products made with that material, aids in this process. Documenting the selection of a product in the project specifications should take this understanding into account. Knowing the important role of proper product installation – and, where necessary, calling upon the expertise of product manufacturers – should not be underestimated. Each part of the process has a major impact on whether the interior spaces delivered to a building owner provide lasting gratification, value, user satisfaction and recognition of the design professional's strategic importance to the project's overall success. ■

TECHNICAL ASSISTANCE

Technical assistance on vinyl flooring and wallcovering is available from the following resources:

All Interior Applications

- **The Vinyl Institute**'s electronic binder on all vinyl building products, including flooring and wallcovering – **Vinyl By Design**™: An Information Resource for Building Design Professionals – is at www.vinylbydesign.com. Product manufacturers are included.
- For the full text of individual **ASTM** standards, go to the ASTM Store at www.astm.org.
- For **NFPA International**'s Life Safety Code Handbook and NFPA 286, visit www.nfpa.org.

Flooring

For information about vinyl flooring, visit the **Resilient Floor Covering Institute** at www.rfci.com. A listing of manufacturers is available, with links to their sites and more information about product specifications.

Wallcovering

A guide to contract wallcoverings, including links to manufacturers and distributors, is available from the **Wallcoverings Association** at www.wallcoverings.org/contract/index.html

Specifications and guidelines, including federal guidelines, are available in the **Chemical Fabrics and Film Association**'s "Research Center" at www.chemicalfabricsandfilm.com.

Click for Additional Information

As part of this CES learning activity, you are required to read additional material. To access the material online, go to www.architecturalrecord.com/CONTEDUC/ConteducC.asp. To obtain a faxed copy, contact Terry Murphy at (410) 461-7285 or vbdmurphy@aol.com.

Learning Objectives

- Understand the performance attributes of vinyl interior products and standards applicable to ensure performance
- Manage design liability by correctly specifying vinyl flooring and wallcoverings
- See how the history and invention of new materials led to the use of vinyl flooring and wallcoverings today.

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 240. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*architecturalrecord.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

Q: 1. Stabilizers in vinyl flooring:
A: a. Provide flexibility.
b. Soften the vinyl.
c. Minimize degradation.

Q: 2. Vinyl sheet flooring with heat-welded seams is appropriate for areas:
A: a. That must be kept sterile.
b. That require consistent coloring.
c. With heavy stationary objects.

Q: 3. Flooring failures in many instances are caused by:
A: a. Ridges or bubbles under the flooring.
b. Wax and surface contamination.
c. Moisture emitted from the substrate.

Q: 4. Vinyl flooring should be installed at room temperature.
A: a. True
b. False

Q: 5. The lower the Static Coefficient of Friction (SCOF), the less slippery the surface.
A: a. True
b. False

Q: 6. Which element determines how well vinyl wallcovering will perform in strength, durability, and cleanability?
A; a. Surface
b. Substrate

Q: 7. With adequate ventilation, the initial odor in vinyl wallcoverings will dissipate much faster than the odors of most paints.
A: a. True
b. False

Q: 8. Conditions that result in mold and mildew growth include spores, moisture, warmth and:
A: a. A food source.
b. Volatile organic compounds (VOCs).
c. Silicone-based cleaners.

Q: 9. "Microvented" products:
A: a. Are mildew-resistant adhesives added after installation.
b. Protect the paper-faced gypsum board behind the wallcovering.
c. Allow moisture behind a covered surface to escape.

Q: 10. Flexible vinyl building products such as wallcovering are produced from an inherently fire-resistant polymer.
A: a. True
b. False

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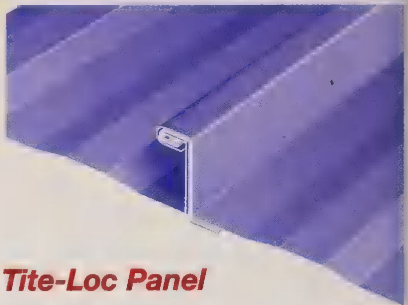

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- ASTM E331/1646 tested

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Digital Practice

IN THIS SECTION: A digital recreation of an architectural treasure; Gehry dons a new hat: technology developer [page 167] ▪ A Web site that bridges cultural divides [page 168] ▪ Architects who design in clicks, not bricks [page 170] ▪ Digital Architect: large-format scanner options [page 177] ▪ New products from Autodesk, Nemetschek, and others [page 180] *—Deborah Snoonian, P.E.*

BYTES

The AIA's Committee on the Environment (COTE) has posted to their Web site a *Guide to Green RFPs*, which contains the full text of RFPs for clients who are requesting green design services. Visit them at www.aia.org/pia/cote.

An online clearinghouse of design and human behavior research, InformeDesign, will launch this month. The site contains practitioner-oriented summaries of research published in more than 200 source journals. It was developed jointly by the American Society of Interior Designers and the University of Minnesota. Visit www.informedesign.com.

In Midtown Manhattan, Bryant Park now offers visitors free wireless Internet access. Laptops, cell phones, and handheld organizers equipped with "WiFi" devices can surf the Web from anywhere in the park. NYCwireless, a local nonprofit group, installed the system with help from the Bryant Park Restoration Corporation. A full list of locations in the New York metro area with free wireless access is available at www.nycwireless.net.

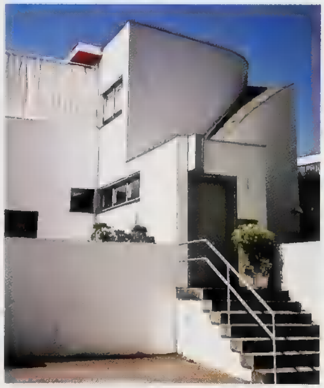
Lawrence Berkeley National Laboratory has introduced ProForm, free software that assesses the environmental and financial impact of energy-efficiency projects. The spreadsheet-based software calculates a project's expected financial indicators and the avoided emissions of carbon dioxide and air pollutants.

A new Web site, www.d4cost.net, lets visitors browse the National Historic Building Cost Database free of charge to develop conceptual cost estimates.

Famed German settlement is rebuilt digitally

Fifty-eight years after being destroyed, one of the more significant architectural masterpieces in the German City of Stuttgart was resurrected last summer—in 3D digital format.

Weissenhofsiedlung, an innovative and controversial housing development in Stuttgart, was built in 1927 by 17 architects from five countries, including Modern masters such as Le Corbusier, Ludwig Mies van der Rohe, and Walter Gropius. Originally serving as a model for city dwellers, 10 of the original 21 houses were destroyed by bombs during World War II. Over time, the other buildings became private residences and were modified, torn down, and, in most cases, given gable ends.



House No. 33 by Hans Scharound.

"This is the first time that these Modern architects of the Bauhaus movement got together and built their own styles in one area," says Martin Trux, the architect involved in the virtual reconstruction. "It is hard today to imagine the entire area as it once stood. Many buildings are gone, and others have been rebuilt differently."

To celebrate the 75th anniversary of Weissenhofsiedlung, the City of Stuttgart partnered with IBM to bring the entire village to life. Using CATIA design software, Stuttgart is allowing 21st-century city dwellers to virtually stroll through Weissenhofsiedlung exactly as it originally stood back in 1927. Trux and his team used the original building plans, along with photographs and the existing structures, to reconstruct the settlement digitally. The effort took 160 hours.

House by architect Josef Frank.

Viewers can not only experience the expanse of the village, but they can also examine original plans, photos, and drawings from the settlement, as well as peek into some of the rooms, with their balconies, terraces, wall bars, and large bathrooms. It also takes the visitor inside the Le Corbusier House, demonstrating its Modern design and airy feel. Trux says the virtual tourist experiences the early-20th-century Weissenhofsiedlung as a pioneering step toward an entirely new form of living—demonstrating simple geometric forms, new materials, and abundant light and air.

The current exhibition, *Weissenhof Digital* (part of the Werbkund exhibition *Die Wohnung 1927*) will eventually be part of a permanent display in the Le Corbusier House in Weissenhofsiedlung, which the City of Stuttgart recently bought. The Le Corbusier House will serve as an architectural documentation center of Modernism, and will be open to the public in 2004. *Victoria Rivkin*

Latest Gehry creation isn't a new building, it's a new company

With Frank O. Gehry's reputation as one of the world's premier architects cemented, his firm, Gehry Partners, has broken new ground with the establishment of a company, Gehry Technologies, that aims to improve the way digital tools are designed and used in the AEC industry. James Glymph, the technology guru who has worked alongside Gehry for more than a decade, will serve as C.E.O. of the new venture. Dennis Shelden, currently director of computing for Gehry Partners, will become its chief technical officer.

Before the end of 2002, the company expects to sign agreements with partner technology companies, chief among them the IBM-owned Dassault Systems, makers of the CATIA software the firm has used to design iconic buildings like the Guggenheim Bilbao [RECORD, October 1997, page 74] and Seattle's Experience Music Project [RECORD, August 2000, page 126]. The hope is that the company will eventually be self-sustaining through a combination of contracts, licensing fees, and grants.

Following a different model

Both Glymph and Shelden envision Gehry Technologies as a hybrid breed of company, at once software developer, consulting firm, and think tank.

As a software developer, Gehry Technologies will work directly with AEC clients such as architecture firms, fabricators, and contractors to create specialized interfaces and additional capabilities for CATIA and other software. These improvements will either be sold back directly to the companies paying for the service, or licensed for a fee for widespread use. "This is the software-development model followed by the automotive, aerospace, and manufacturing industries," explains Glymph. "There's a lot in [those] models that can be applied in the construction industry, and over time, we've developed some very clear ideas on what types of software interfaces and capabilities would be needed by our peers and partners in this business."

In its second role, Gehry Technologies will also offer strategic consulting and training to practitioners, students, and educators. Glymph envisions this practice encompassing everything from teaching architects how to use 3D design software like CATIA to training managers on how to structure projects that use digital building models to avoid technical and administrative pitfalls to educating firms about contractual and legal issues that may crop up. "If you can't deal with the administrative and legal and contractual issues that are raised when working in this manner, the technology won't get you anywhere," he says. Classroom space for training will be available in a building adjacent to new offices under construction for Gehry Partners in Marina del Rey, California.

Glymph and Shelden also hope to tap foundations and other grantgivers to finance basic research and experimental projects in design computing. The hope is that the company will eventually be self-sustaining through a mix of contracts, licensing fees, and grants.

Why start a technology-based venture in a post-dot-com, economically unstable era? Glymph says the timing is more apt now than it was in the heady 1990s. "Over the past five years, we've become increasingly aware that what we've been doing [at Gehry Partners] is about to be feasible on a much broader range of project types and budgets and concerns because of cheaper, faster computers," he says. The latest version of CATIA, for instance, works on a PC rather than Unix, so the average AEC office now has the computing power to use it.

If it succeeds, Gehry Technologies will only add to the architect's legacy. "We asked ourselves, can we have a positive influence instead of just doing projects our way?" says Glymph. "We think we can. We want to actively participate in what we believe will be a very important decade for the construction industry."

Or maybe they just want some company—literally. "What Frank does with his designs forces us to be pioneers in using digital building models and sharing data," Glymph says. We've been pretty lonely pioneers." *Deborah Snoonian, P.E.*

Web site for Islamic architecture forms a new global community and bridges cultural divides

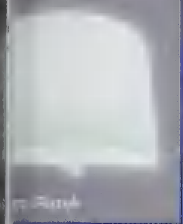
In September, the Aga Khan Program for Islamic Architecture celebrated the official launch of a major new Web site, ArchNet (www.archnet.org), which houses the largest online collection of architectural resources devoted to the design and culture of Islamic societies.

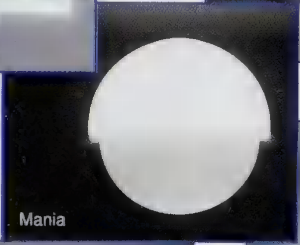
The Program for Islamic Architecture, established in 1977 and administered jointly by Harvard and MIT, created ArchNet to fulfill the needs of students, educators, and professionals in the Islamic world, who often lack access to architectural publications and research. "I believe that ArchNet demonstrates the enormous potential of the global information system for supporting communication and collaboration among architectural and planning students, faculty, scholars, and practitioners throughout the world," said His Highness the Aga Khan.

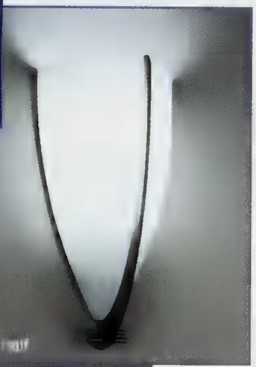
The central feature of ArchNet is a vast (and growing) digital library of more than 600,000 images, drawings, videos, and publications. Materials are classified by type, location, and time period so that users can search the database using these criteria. The library was drawn from the collections of the participating institutions, which initially include Harvard, MIT, and schools in Egypt, India, Jordan, Lebanon, Malaysia, Pakistan, and Turkey. More participating schools are expected to sign on and contribute their materials to the Web site in the coming months.

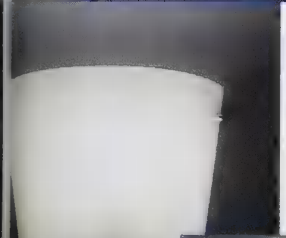
Already, more than 6,000 people from 110 countries have registered to use ArchNet, which is free for all members. In addition to the digital library (the Halawa House in Agamy, Egypt, pictured at left, is in the archives), ArchNet has an online calendar for events related to architecture and planning; syllabi and lecture material for courses in architecture; discussion forums; job listings; and news items. Members can initiate discussion topics and post news and events. Groups working online can form virtual workspaces within ArchNet to share project information among themselves and with other interested parties. Both real-time and asynchronous online collaboration is possible.

The MIT School of Architecture and Planning spent three years programming and refining the site, working collaboratively with His Highness the Aga Khan, who sought to "find ways in which the profound humanistic tradition of Islam could inform the concept and construction of buildings and public spaces." The result is the sort of online utopia envisioned by the Internet's early pioneers: a widely available, inexpensive resource that enables the free, candid, and constant exchange of ideas and information among people scattered throughout the world. "ArchNet seeks to honor the rich legacy of [Islamic] cultures," said William J. Mitchell, dean of MIT's School of Architecture and Planning. "This is an important project and one that has the ability to have wide-reaching reverberations for the built environment across much of the developing world." The site also illustrates the democratic spirit of MIT's OpenCourseWare initiative, in which the school intends to publish all its course material online free of charge. *D.S.*









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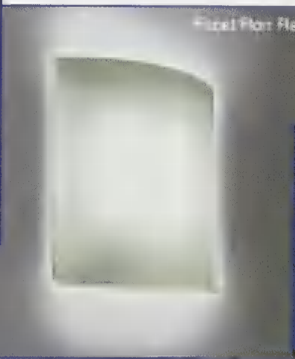

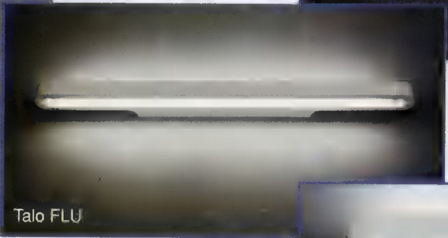

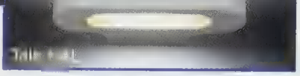

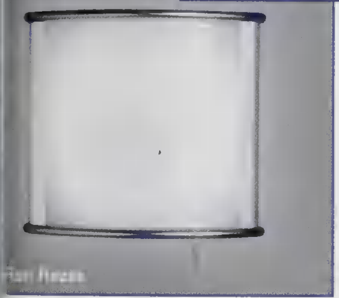

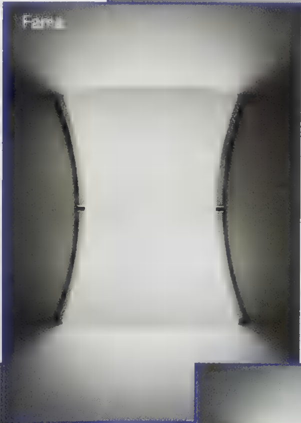

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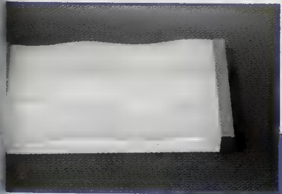

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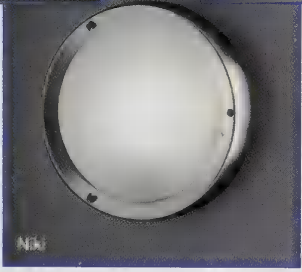

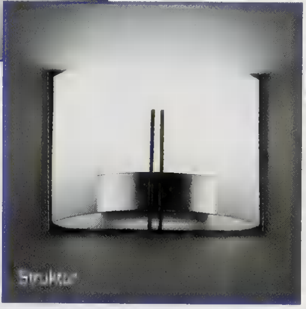

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Building with clicks, not bricks

ARCHITECTS WHO PRACTICE IN VIRTUAL SPACE SAY THEY ENJOY ALL THE PLEASURES OF DESIGN WITH NONE OF THE HEADACHES OF CONSTRUCTION

By Sam Lubell

Sean Ahlquist, a 30-year-old, San Francisco-based architect, has designed a civic gathering space that's daring and original, bursting with light, detail, and color. The twisted, warped structure of glass, steel, and stone tests the limits of architectural possibility. Its contours challenge established notions of space arrangement. It's even won him acclaim in a national design competition.

Ahlquist's building is not real. And it will never be built. But who cares? He certainly doesn't.

He's one of a new generation of architects brought up on powerful, ubiquitous computing technology who design and build in virtual space. The digital age has given younger architects like Ahlquist, who would likely be relegated to menial tasks like drawing details in a traditional architectural practice, the chance to experiment boldly and disseminate their ideas and designs to a large audience via the Internet, exhibitions, and print and online publications.

And while some practitioners hold virtual architects in contempt for their lack of practicality, most recognize that computing technologies are inevitably shaping both the practice of architectural design and the form of buildings themselves.

With renderings, architects can direct the show

Many software-savvy architects help other designers present their work digitally in renderings and animations. For the past several years, well-heeled firms have commissioned 3D animators to design virtual walk-throughs and videos of their projects for promotion, presentation, and other purposes. New York City visualization firm IOMedia has created intricate movie presentations for Polshek Partnership's Clinton Library in Arkansas and Gehry Partners' Guggenheim Las Vegas *Art of the Motorcycle* exhibition to help raise funds and generate publicity for these works. The Boston firm Neoscape helped the New York 2012 Committee give colorful, 3D previews of its event sites to the United States and International Olympic committees. Many architects, like Friedrich St. Florien, who commissioned Providence, R.I., firm Advanced Media Design to create digital renderings of his World War II Memorial in Washington, D.C., appreciate the ability of computer models to give clear visual indications of how projects are advancing.

Digital renderers trained in architecture recognize their work is often limited by the visions of the architects they work with. Yet many of them say they don't miss the tedium and constraints of their old profession. "I found out architecture was all about wall sections and roof details, not schematic designs," says Adam Kruvand of Studio 2A, a digital design firm based in Kansas City and New York, which recently completed 3D renderings for the new Soldier's Field in Chicago. Kruvand had worked previously for Hellmuth, Obata + Kassabaum's HOK Sport.

His creative outlets, he says, include collaborating with firms to put together the 3D conception of a project: choosing colors, lighting, textures, and camera views for renderings. "I gravitated to 3D stuff because that's where I could actually use my art and design skills to affect the way things looked," he says.

Peter Korian, president of IOMedia, sees the digital renderer as an extension of a firm's skills and a vital way to promote projects. "Every architecture firm should have 30 additional people who do what we do," he says. Calling his contemporaries "technologists" instead of architects, he says that using 3D technology to make creative, emotional presentations of a project is every bit as creative—and satisfying—as designing a building in bricks and mortar. "If Frank Lloyd Wright or Le Corbusier were around today, they'd be doing what we're doing," he says.

Tackling their own designs

While renderers and animators proliferate, other architects design entirely computerized constructions of their own that stretch the architectural imagination and even inspire (gasp!) real structures. "I think students coming out of school realize not everything we do has to be [in] physical

Sam Lubell is a freelance writer living in New York City. His work has appeared in ARCHITECTURAL RECORD, The New York Times, New York *magazine, and Bergen County, N.J.'s* The Record. *He studied architectural history at Brown University.*

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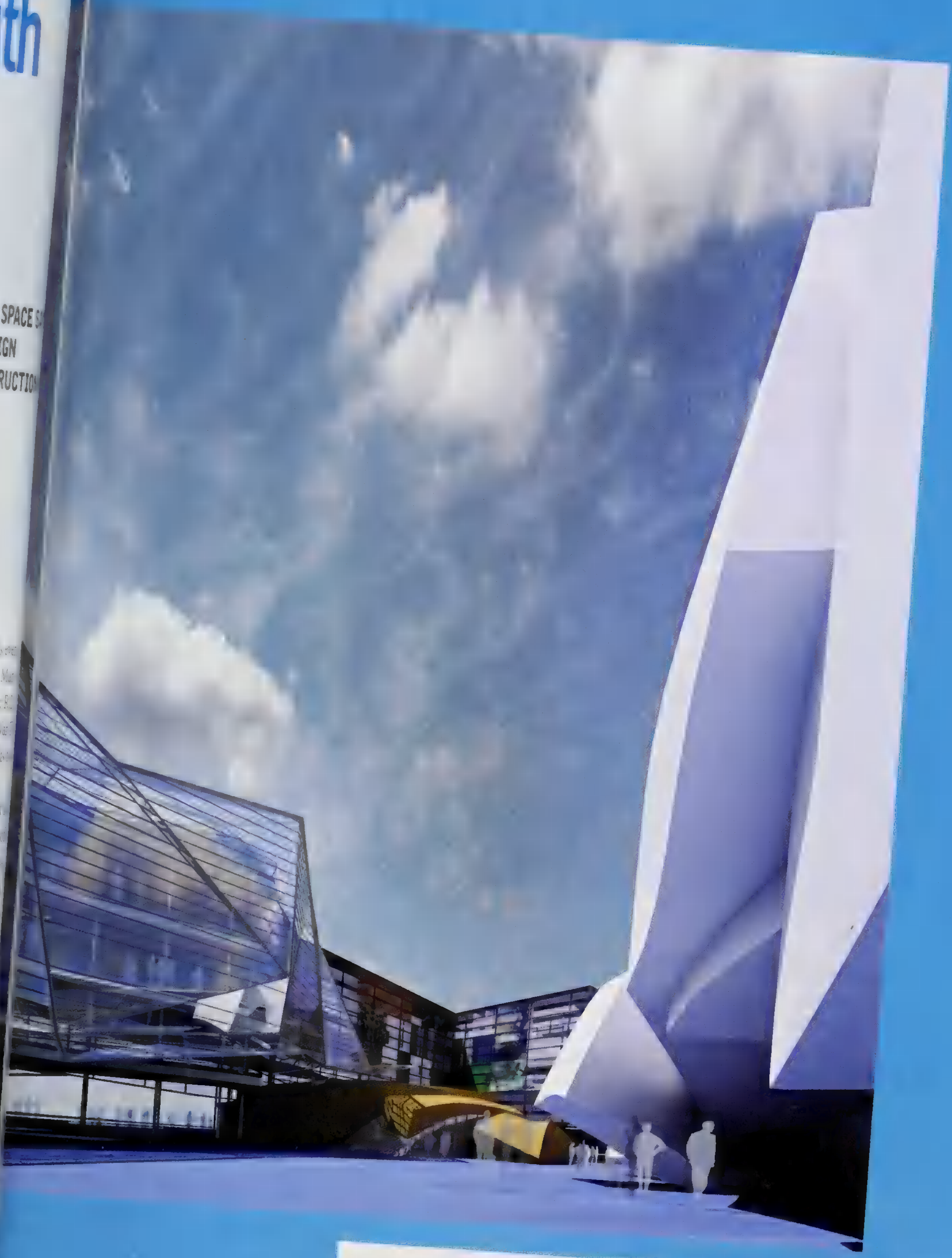
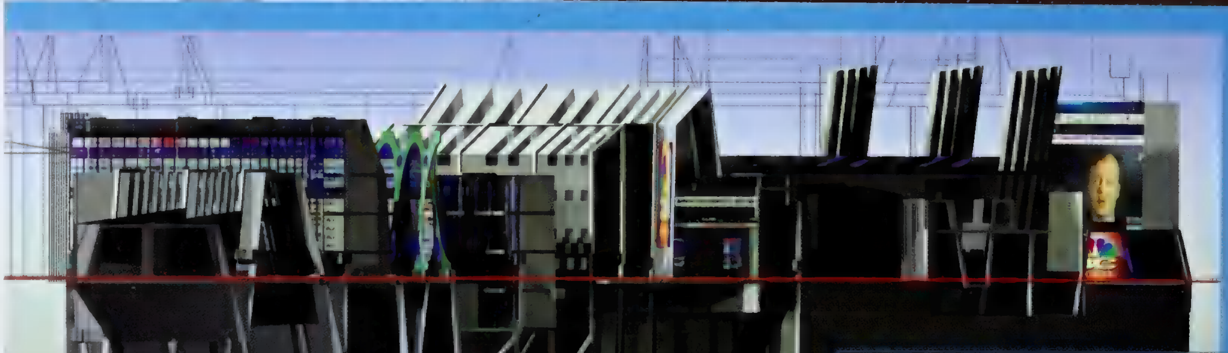
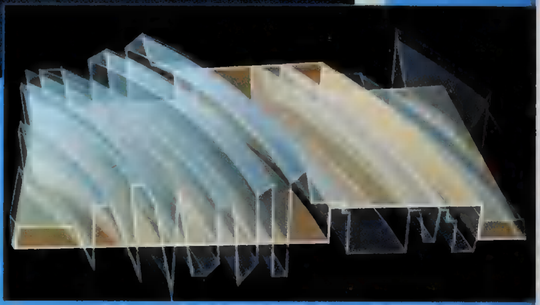
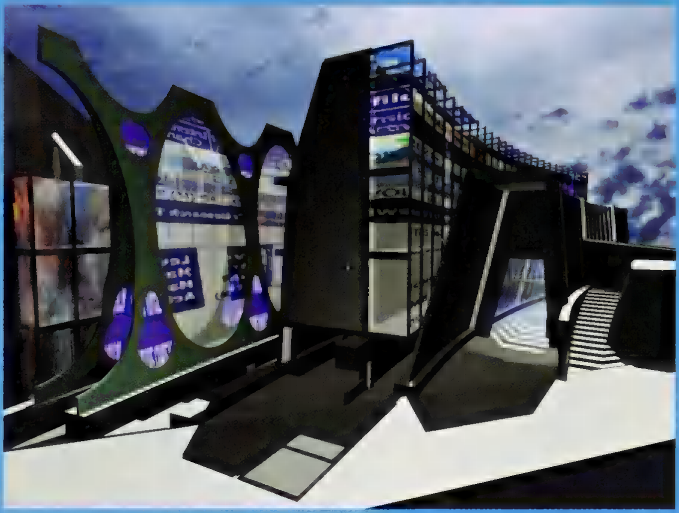


Winning entry for ACADIA design competition, 2001 (left); Private residence, currently in design (bottom) Architects Sean Ahlquist and Ryan Spruston fashioned a flexible, virtual gathering space in Berlin. Designing this entry was a proving ground for Ahlquist, who is using some of the ideas from that project in a home he is designing for an avid climber who lives on the California coast.







Entry for ACADIA design competition, 2001
As an example of how technology shapes form, designers Sean McCormack and Andrew Karlson looked at the wave pattern generated by that most annoying of digital-age sounds—the screech of a modem as it connects to the Internet—and transformed it into a virtual structure of glass and steel. Its zigzaggy shape conveys a zealous (if off-kilter) energy, much like the noise that inspired it.

[space]," says Peter Anders, one of the organizers of the 2001 Association of Computer Aided Design in Architecture (ACADIA) design competition, which Ahlquist entered with his design partner, Ryan Spruston.

The ACADIA competition challenged contestants to build a virtual civic gathering space in Berlin called "Inforum." Ideas were posted and judged on the Web. Ahlquist and Spruston's building, which Ahlquist describes as "a wrapper that captures exterior space and carries it inside," has winding, unevenly shaped rooms and hallways that are intentionally difficult to earmark for usage. "This is a building that's amorphous. Different uses can develop over time," Ahlquist says. Thanks to the designers' skillful use of lighting and their attention to material detail, viewers are treated to stunningly realistic perspectives of the virtual glass, metal, and stone edifice, and the mesmerizing sky behind it.

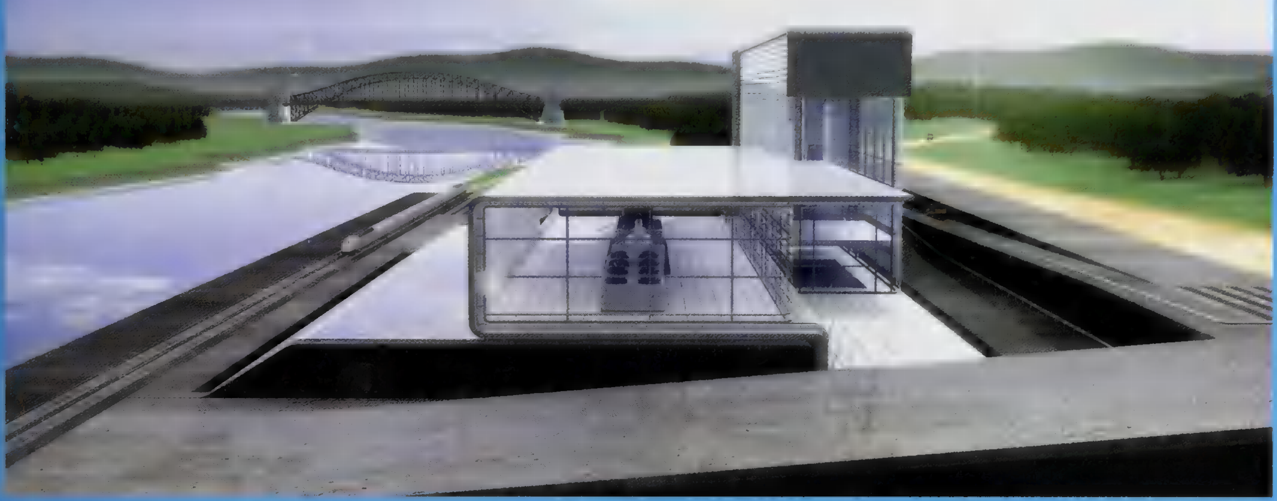
Alquist designed his entry on his desktop PC using Autodesk Viz 4 (a 3D modeling program that adds architectural tools to traditional 3D graphics programs, like 3D Studio Max), and RHINO, a form-modeling program used frequently by mechanical engineers, which tackles engineering and fabrication. The folds in the building's glass and metal, Ahlquist explains, could not be rendered in 2D drawings or CAD files. "There's no way I could sketch this out for the client, let alone me, to understand," he says.

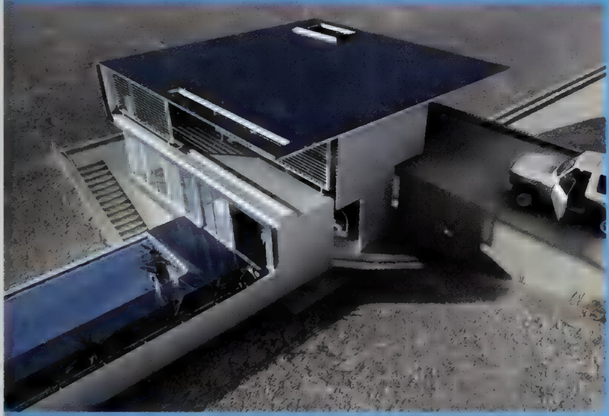
Sean McCormack and Andrew Karlson, young architects from Environs Development and Earth Tech, in Chicago, designed their expansive model for the 2001 ACADIA competition by converting the sound waves of a squealing modem connecting to the Internet into CAD files. The result is a rounded, multilayered, glass-and-steel superstructure.

Some architects have even started their own firms that take on technology-focused projects that would be unusual for a traditional practice to handle. Dean Di Simone and Joseph Kosinski, who met while earning master's degrees in architecture at Columbia University, are founding partners of KDLAB, a New York digital design studio. "In a typical architectural practice, you have to put in a handful of years under a licensed architect and end up spending 10 percent of your time designing. In our practice, we're able to spend a much larger portion of our time designing rather than administering our projects," says Di Simone.

> **"WE'RE ABLE TO SPEND A MUCH LARGER PORTION OF OUR TIME DESIGNING RATHER THAN ADMINISTERING PROJECTS."**

The projects include designing virtual power plants to promote the Department of Energy's "Vision 21" project, which will create environmentally friendly power-generation structures. The digital projects, made with 3ds max 5 and Mental Ray (3D animation and rendering software used by digital effects houses such as Industrial Light and Magic), are designed for the year 2020. The project gave the designers leeway to

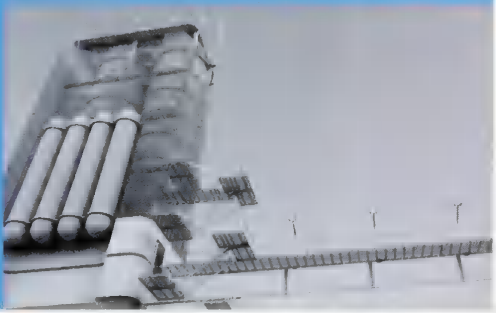




"Vision 21" power plants, 2000 (top and bottom); Desert H2Ouse, 2000 (left)

Digital design firm KDLAB got free reign to imagine what clean-energy-producing substations would look like in the year 2020.

Their photorealistic film featuring a virtual residence in the desert has been shown on the animation-festival circuit for the past two years.



IMAGES: © KDLAB

create structures that tested limits, overthrew conventions of plant design, and challenged their imagination. "The parameters for these projects differ drastically from most client work, although the design challenges are similar in many ways. The Department of Energy gave us an enormous amount of design freedom. It's kind of a dream project," says Di Simone.

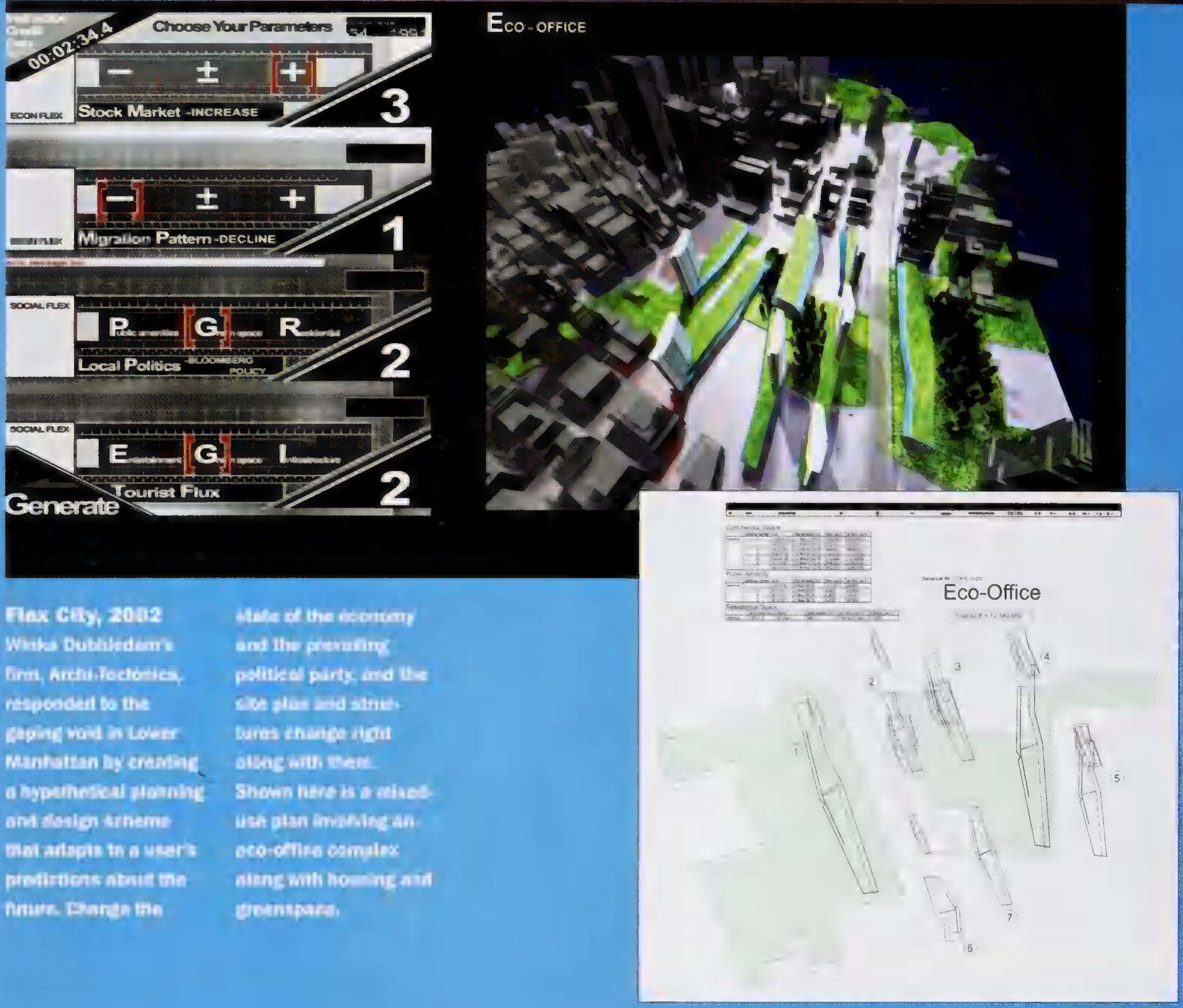
KDLAB's sleek designs challenge power plants' intimidating, grimy image. There are no smokestacks, for instance, because the plants will utilize new combustion processes that convert fossil fuels to power in a cleaner, more efficient manner than in the past. KDLAB has also dedicated much of the footprints of each power plant to greenspace. One design in their repertoire is a 65-story, bioclimatic skyscraper in the middle of Lower Manhattan that has a memorable, aerodynamic form more reminiscent of a sports car than a structure where electricity is generated. "We wanted it to be something that would shatter people's conception of what a power plant should look like and where it could be located," says Kosinski. In addition to a bank of fuel cells and a gas turbine in the basement, the building also has photovoltaic cells integrated into its facade and a wind turbine on its roof to generate additional electricity.

Another KDLAB construction, the Desert H2Ouse, is an environmentally friendly residence that reuses water collected from an on-site aquifer. It's featured in a two-minute animated film that has been traveling to animation festivals around the world, taking second place at the 2001 WebCuts Internet film festival in Berlin. The fusion of film and architecture is something that interests KDLAB, whether researching the re-creation of light phenomena in the computer or the digital simulation of a handheld camera. When introducing Desert H2Ouse into the design category of the 2001 RESFEST Film Festival, organizers coined a new term in its description—Cinema Architectura.

Another digital architect, Winka Dubbledam, head of New York City firm Archi-Tectonics, created a 3D exhibition called *From HardWare to SoftForm* with the help of MIT's Media Lab. The exhibition shows the central space of a house the firm built, morphed, twisted, and reconstituted in virtual space. Another conceptual project, *Flex City*, offers a plan to redevelop Lower Manhattan. It changes in real time on-screen as users plug in various social criteria. Buildings expand and contract, and greenspaces shrink or enlarge, as the user decides what the value of the stock market is and who will be in political office in the next few years.

Dubbledam describes this piece, and all her architecture, as "intelligent" because of its flexibility and adaptability, common themes in virtual architecture. "I thought it was more important to show people what's possible and explore what defines a city," she says. The computer, she says, lets people do research and set criteria for themselves.

Virtual architects also work on nonbuilding projects such as Web sites and digital exhibitions. Asymptote, a New York firm, designed an interactive landscape for the Guggenheim's online Virtual Museum. Taking the deformed structures of Frank Gehry's Guggenheim Bilbao



Flex City, 2002 Winka Dubbeldam's firm, Archi-Tectonics, responded to the gaping void in Lower Manhattan by creating a hypothetical planning and design scheme that adapts to a user's predictions about the future. Change the state of the economy and the prevailing political party, and the site plan and structures change right along with them. Shown here is a mixed-use plan involving an eco-office complex along with housing and greenspace.

even further, the Web site's central visual motif, a loose spiral reminiscent of the Guggenheim Museum in New York, deconstructs and morphs itself according to the choices of the user, who "flies" through the site to explore its various sections, such as exhibition information or the museum itself.

Architects, says Lise Anne Couture, one of Asymptote's founders, are highly qualified to design in the virtual world as well as the physical one. "We are experts in spatiality and well trained to be able to deal with complexity," she says. Peter Anders, author of the book *Envisioning Cyberspace: Designing 3D Electronic Spaces* (McGraw-Hill Professional, 1998), points out that the design of 3D online worlds like "Collaboratories," where users interact with each other in a visually active virtual-reality space, will keep architects busy for years to come.

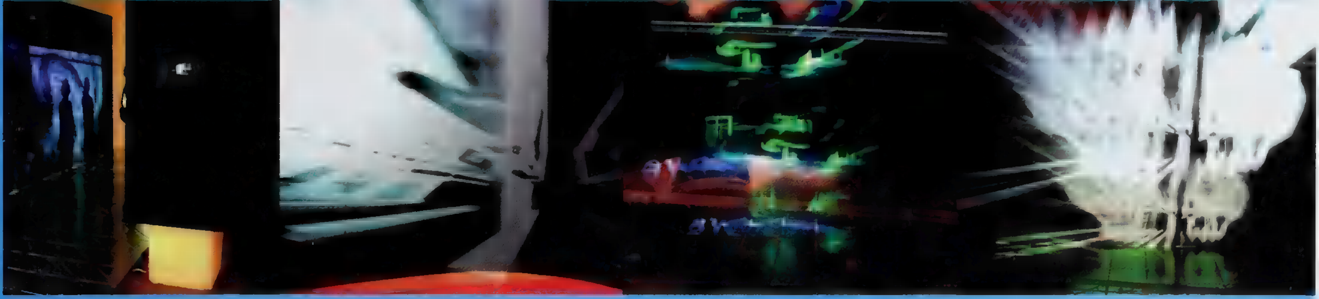
If it's only digital, can it be architecture?

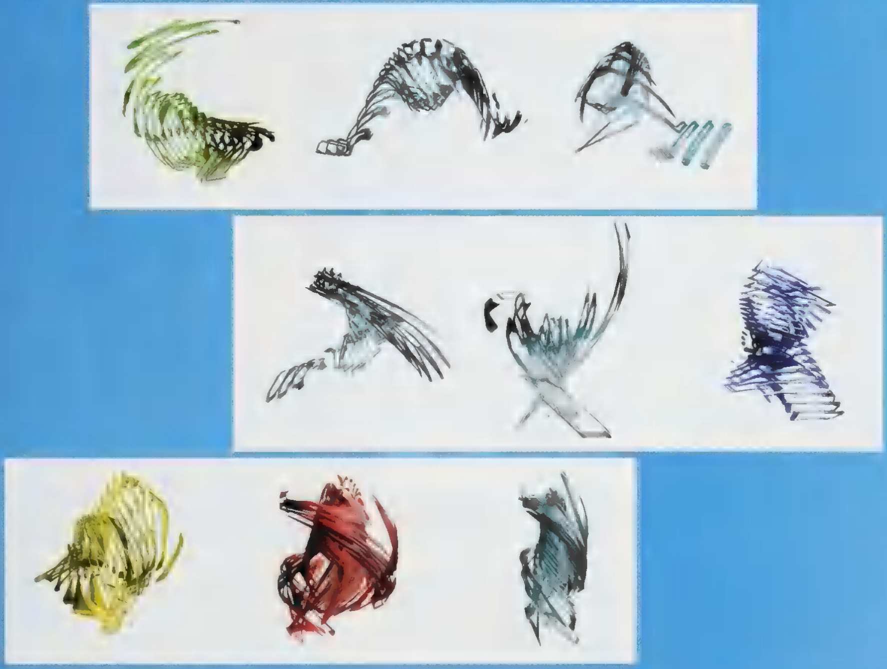
Ever since the explosive rise of virtual forms of building in the mid-1990s, critics have posited that digital tools divert architects from important issues of craftsmanship and constructability. Dennis Shelden, director of computing at Gehry Partners, appreciates that younger architects are literate in complex computer programs, but also notes that, lacking the physical and economic constraints of real buildings, virtual architects neglect important elements that are vital to the architectural process. "You have students who don't take a building construction class. They know how to design, but they don't know how a wall goes together," he says. "In a purely virtual world, there's no dialogue about the issue of craft and how things are made. A big piece of the richness is missing."

Asymptote's Couture recognizes the seduction of virtual design to ignore the concerns of budgets, materials, schedules, and program but still believes that responsible virtual architects avoid obsession with aesthetic issues. She adds that virtual architecture faces its own, equally relevant design challenges. "Why it has to be bricks and money as opposed to time and pixels, who's to say?" she comments. "I think architects have always worked in virtual reality. You're always talking about potential, and it's never completely realized actually." The real world, she says, is full of edifices that should not be considered architecture. "People are so willing to question whether a 3D space conceived for the Internet is architecture. Nobody would hesitate to call the most mediocre building in our fabric architecture. I think architecture should be something that frames our experience, that makes it meaningful, that can inspire."

"IF FRANK LLOYD WRIGHT OR LE CORBUSIER WERE AROUND TODAY, THEY'D BE DOING WHAT WE'RE DOING."

Many virtual architects also argue that their ideas and structures constantly inform built works. Ahlquist's virtual building for ACADIA has helped him develop subsequent projects, he says. Its changing forms and





From HardWare to SoftForm, 2001
Archi-Tectonics developed this interactive installation with MIT's Media Lab. It investigates a virtual object, called "Armature," inspired by the interior shape of a residential project. Above, the Armature is interpreted visually as an experience of light and sound. At left, a taxonomy of variations on the Armature as it is transformed by virtual "operations" such as push, bend, and pull.

IMAGES: © ARCHI-TECTONICS

unorthodox angles served as a practice run for the design of an unusual new house in California called Seadrift. The house, built for a climbing enthusiast, has an exterior that acts as a climbing wall, and it has so many twists and turns it can make you dizzy. Like his ACADIA entry, the house's geometry is too intricate to be resolved in two dimensions. "It helped to be able to build and understand these shapes and odd angles and connections [virtually]," he says.

Ahlquist scoffs at the idea that his digital work isn't real. "Just because it's not resolving issues of being built, I don't think that rules it out from being architecture. What we do is not about creating a buildable object, but finding different ways to express architectural ideas," he says.

Asymptote's online, virtual New York Stock Exchange trading floor, designed in 1998 to help the Exchange manage and visualize its flow of information, informed the recent remodeling of their physical operations center. The center's design echoes "the liquid quality and weightlessness of the virtual realm," says Couture, and is even painted in the same blue tones as the Web site. The firm's skill at utilizing 3D computer forms is also evident in its seaside HydraPier pavilion near Amsterdam. The building's form was based on a simulation of an airplane wing being deformed by water flowing over it. "The curves and complex geometries are a result of the computer design phase," says Couture.

The impact of virtual architecture on physical architecture is also embodied in bricks-and-mortar buildings that incorporate cyber elements. ACADIA's Anders refers to these structures as "cybrids," combining technology and physicality, and allowing once-hypothesized ideas to become real. "You've got your brick, mortar, and concrete, and then you've got technological materials that are able to change an environment. It's one more notch on your tool belt," says Eric Clough, founder of 212 Box, a design firm in New York City's trendy Tribeca neighborhood. The company is creating the ***BOX, a cubed living space made almost entirely of glass embedded with LCD screens that project television or advertisements. The firm is planning to make it the focal point of a feature-length animated movie, in collaboration with KDLAB. "I think nowadays building in digital space and animating it is the only way you can direct your dreams," says Clough.

"NOWADAYS, BUILDING IN DIGITAL SPACE AND ANIMATING IT IS THE ONLY WAY YOU CAN DIRECT YOUR DREAMS."

Perhaps more than anything, virtual architects dislike being sidelined by the frustrations of traditional practice—clients unwilling take design risks, limited budgets, construction schedules delayed b suits or bad weather. Virtual architecture, constantly mutab allows architects to break physical, technical, even professional boundaries. They provide, as Couture says, "infinite possibilities for change." ■

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Digital Architect

Mapping large-format scanner selection

By Michael Bordenaro

Vhen Mark Kiker, director of core echnologies for the AEC firm MJMH+N in Los Angeles, walks p to one of his firm's large-format canners, he has a complex series f choices. Scan to print? Scan to ile? File in a personal folder or on a etworked hard drive? What graphic ormat to scan in—TIF, JPG, PDF, r another? Increase or decrease mage size? Reverse image to make egacy blueprints more legible? Correct for distortion? Scan in color r grayscale?

Luckily, many contemporary scanners have intuitive interfaces hat simplify these choices and make he selections easy to execute. But deciding which scanner to buy in the irst place is not so simple.

The large-format scanner market has both consolidated and expanded in the past 14 months. Significant feature sets have been introduced, and manufacturers have their sights on making large-format scans more conducive for sharing on the Web. The resulting profusion of scanner choices is hard to keep up with, even for technology gurus.

Getting a handle on the selection options means keeping up with manufacturers. Some of the most popular manufacturers of large-format scanners include Xerox Engineering Systems (XES), Contex Scanning Technology (the result of a recent merger between Contex Holding A/S and Vidar Systems Corporation), Océ, ACTion Imaging Solutions, and the Japan-based Kyocera Mita. GTCO CalComp, known for its digitizing technology, added a line of large-format scanners in late 2001 and has expanded its offerings in the past few months.

AEC firms have determined that large-format scanning alone is not a high priority, so manufacturers have responded by creating multifunction machines that scan, plot, and copy documents, and by providing combinable components to meet specific needs. For example, many architecture firms have an independent large-scale scanner linked to a separate large-scale plotter for CAD drawings, connected through a dedicated computer with software for processing, networking, and storage of files that are scanned and saved electronically.

At DMJMH+N, Kiker has a monochrome XES multifunction unit and recently added a single-function device from Contex. But he hasn't stopped investigating other choices. "XES has a new large-format color scanner that I would seriously look at because of its upgraded feature sets," Kiker said. His large firm is in need of several devices, and his constant scouting illustrates the profusion of options available.

How do they work?

The digital imaging devices used by scanners are, by and large, charged-couple devices (CCDs), the same technology used in digital cameras. Most large-format scanners use multiple CCDs to scan across the width of a document; the machine then uses internal software to combine and align, or "stitch," the multiple images together. Two years ago, XES introduced units with complimentary metal-oxide silicone (CMOS) imaging technology, used to create images for silicon-chip manufacturing. This technology allowed XES to create large-format devices with a single optical device for scanning, according to Marc Neiss, XES's director of technical document solutions. But, depending on the length of the document being scanned, using software to align images may be necessary no matter which type of device is used.

Sorting through options

One obvious choice that faces architects is whether to purchase a monochrome or a color scanner. Depending on the options selected, it's entirely possible to obtain a color scanner for less than a black-and-white model, says John Vitale, the owner of Palisades Research in Pacific Palisades, California, an IT firm that has provided software, hardware, scanning, and archiving services for almost 20 years. One feature that Vitale recommends is a minimum 300 dpi true color optical resolution for high-quality results. Océ's spokesperson, Francis Faye, indicates that scans at 400 dpi have become the AEC industry standard, but that higher-quality units are available when precise rendering of aerial photography and other finely detailed information is needed in the final product.

Another feature that figures into productivity and cost is the speed of scanning. While it's mechanically feasible to pull drawings through machines at almost

XES's XEScan Solution allows scan-to-file, digital archiving, and job accounting. Upgrades allow scan-to-e-mail, monochrome editing, and other features.

Michael Bordenaro is based in Chicago and writes frequently about architecture and technology.

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any rate, the speed is limited by the ability of a scanner's software to process the resulting images. Machines that scan documents faster are more expensive. Contex offers units with speeds starting at 0.5 inches per second (ips) and up to 3 ips. XES currently offers scan speeds up to 4 ips on some units and plans to make 7.4 ips units available in the first quarter of 2003, says Neiss.

The standard width for large-scale scanners in the AEC industry is 36 inches, although other sizes are available (the graphic production industry, for instance, often uses units with a 50-inch scan width). The thickness of the media scanned is also important when choosing a device. Océ, XES, Contex, and other manufacturers offer units that can accept material up to 0.6 inches thick. DMJMH+N's Kiker says, "Our Contex unit handles various thicknesses of media, including 0.5-inch foam-core presentation boards that we scan for our records."

A mechanical feature that Kiker appreciates is the "two-sided drive" that was a differentiating point for scanners made by Vidar (now Contex). Most large-scale scanners have powered rollers on the bottom side of the media and free-moving rollers on top. Vidar became known for powering both sets of rollers; the consistent feed achieved from this improvement protects the original document and provides a steadier image for scanning, according to Palisades Research's Vitale. (The feature was still available on machines made by the newly merged Contex, but industry insiders have heard unconfirmed rumors that Contex may phase out production of these units.)

Jorge Septién, chief information officer for Gruzen Samton Architects, in New York City, says protecting the media being scanned from roller damage or unexpected snags is especially important for older, fragile documents. "We have created a clear plastic sleeve that we slip older drawings into before scanning them on our Océ units," Septién says. Océ's Faye notes that in cases where a document's safety is a high priority, some architects have created sleeves with firm cardboard backings and clear plastic covers.

Software's at the heart

The interfaces that control how a user operates a scanner were once frustratingly complex. Septién notes that ease of use has improved greatly in recent years with the advent of LCD touch-screen displays for changing options like scale, dots per inch, and color selection. "Basically, it is like a copy machine," he says. "Our new [Océ] unit is very easy to use. There is no guesswork." Scanning documents to electronic formats usually requires more familiarity with the interface software, says Septién. "Saving to a particular file format is not a 'one button' operation," he says.

Kyocera Mita's KM-4850w can scan, print, and copy. It is small enough to fit in tight spaces.

In addition to the software that simplifies the user interface, Océ's Faye says, "All large-format scanners come with at least a basic level of scan-management software." For example, VB-Clean scan-management software from Paradigm Imaging Group helps to deskew, despeckle, crop, and perform other "cleaning" tasks on scanned documents. It can also be used to repair faint and broken characters. The company's VB-Index automatically captures and displays title block information for easy referencing of large quantities of drawings. Drawing information can then be stored in a Microsoft Access database for future reference.

Océ's TDS600 multifunction unit works well for high-volume situations. The company's Scan-to-Archive software also helps firms digitize their print sets.

Tools for managing scanning tasks are also available in many CAD software packages, such as AutoCAD and Microstation.

Money matters, future trends

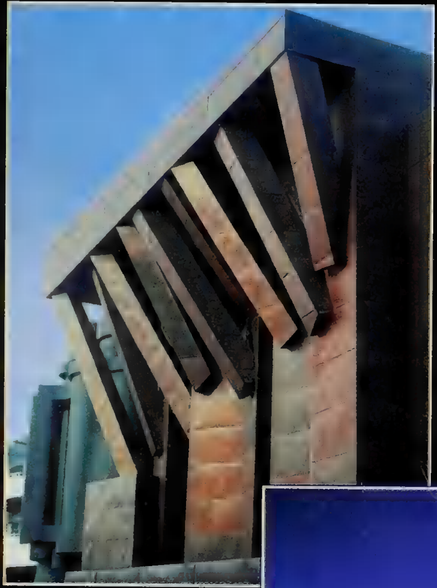
Large-format scanners are among the most expensive pieces of equipment used by a firm. While quality stand-alone, large-format scanners can be found in the $8,000 range, multifunction devices and the combination of components used by AEC firms can cost as much as $35,000 or more. XES's Neiss says, "Depending on scan speed and color options, the XEScan Solution can range from $13,000 to $29,000." He adds, "The company's DS line of monochrome multifunction devices that are oriented for copy performance can range from $25,000 to $28,000, depending on hardware and software features included."

If wide-format printing is a priority and scanning is only a secondary need, Kyocera Mita has a series of 600 dpi printers with scanner add-on capability. The company offers a high-end, stand-alone, large-format copier that can be upgraded to include scanning and printing capabilities at a cost between $30,000 and $60,000. The company also has two 600 dpi printers that range from $17,500 to $24,000 that be equipped with an optional scanner for less than $12,000.

Many reprographics houses offer leasing agreements for scanners that can be cost-competitive with purchasing them outright. The cost of such services varies widely depending on the type of device and the volume of scanning done.

Faye sees developments in large-scale scanners focusing on color enhancement and sharing data on the Web. "We are seeing the advancement of color as a key component in scanning, although the resulting electronic files are huge. Sharing massive files is an issue we're addressing in a number of ways," he says. Neiss says XES is developing a proprietary algorithm that will compress the large files that result from increased color, higher variations of grayscales, and the use of embedded 3D images. ■

Designing with copper?



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By Deborah Snoonian, P.E.

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This infrared-equipped ballpoint pen saves what you scribble. Write on a specially printed digital notebook or Post-It note, place your pen in the USB-equipped cradle (like synchronizing a handheld organizer), and your pen strokes are transferred to your computer. The software included works with Lotus Notes and Microsoft Outlook, so you can share your ideas with others easily. Handwritten documents are saved as PEN files, which can be exported to formats such as JPEG, Microsoft Word, and others.

Revit 5.0
Autodesk
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Revit 5.0 is the first major new upgrade of the 3D building-modeling program since it was acquired by Autodesk earlier this year. The company now calls it their "strategic authoring application for the building industry." Improvements in this version include the ability to link multiple building models for campus-style projects; faster opening and saving of files; accurate modeling of detailed assemblies and walls with properties that vary vertically; better automation of construction documentation, such as plans and elevations; easier methods to print entire drawing sets; and ability to create walk-through animations of projects.

Vision
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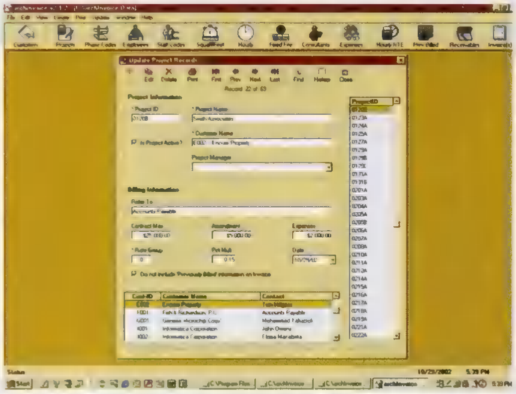
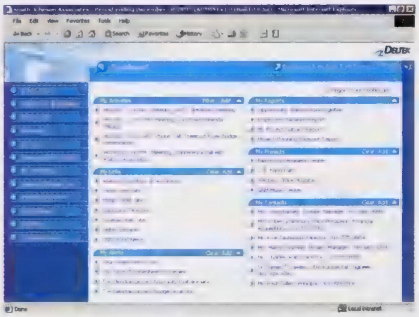
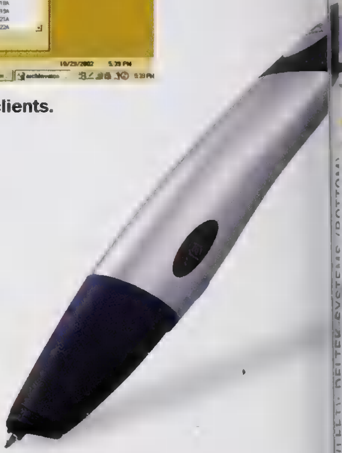
Building on Deltek's extensive experience in creating tools for management and accounting, Vision is an integrated solution for managing the entire life cycle of AEC projects, with modules for client relationship management, proposal tracking, resource and project scheduling and planning, time and expense management, accounting, and billing. The Vision "dashboard" is the application's portal that displays essential project data and management tools, with links to project team members, schedules, and other critical information. The modules can be purchased and used separately, or deployed together for a one-stop solution. A computer needs only a Web browser to use Vision—no additional software installation is necessary.



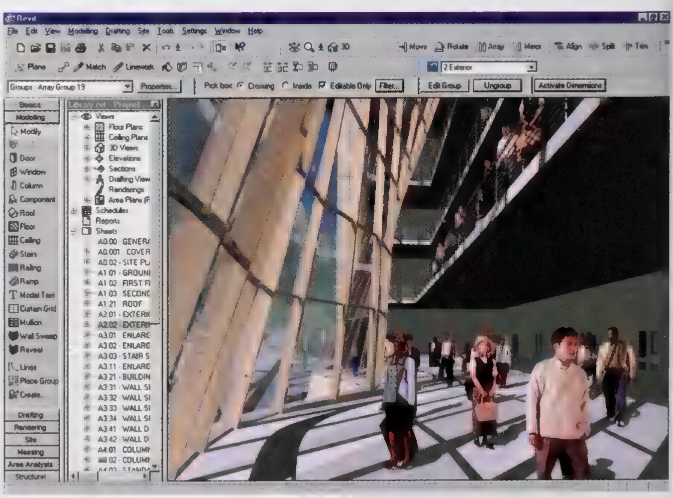
ArchInvoice helps design firms bill their clients.

The desktop for Deltek's Vision.



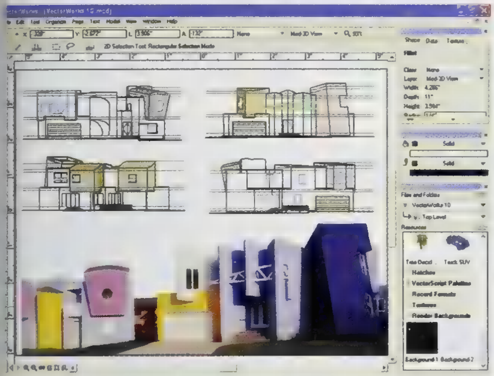


Logitech's io Digital Pen.

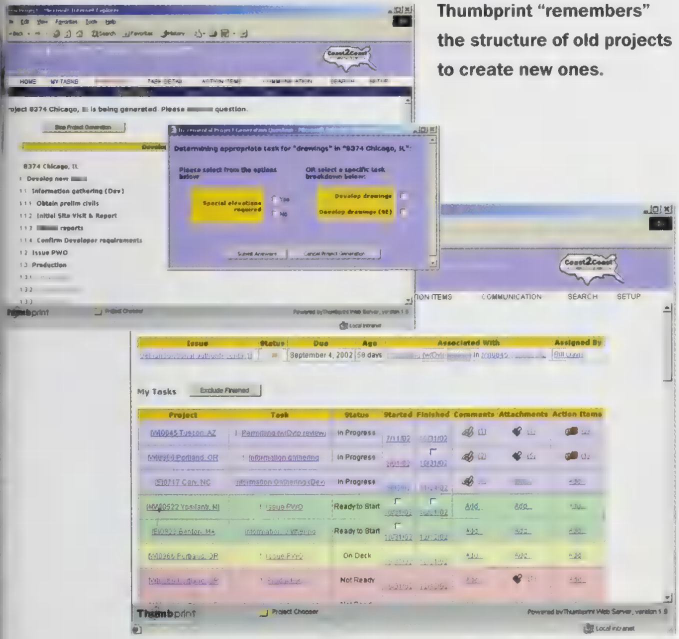


The new version of Autodesk's Revit allows 3D animations.

VectorWorks ARCHITECT 10 has a suite of changes.



Thumbprint “remembers” the structure of old projects to create new ones.



Project 8374 Chicago, IL is being generated. Please answer question.

Determining appropriate task for "drawings" in "8374 Chicago, IL":

Please select from the options below:

Special elevations required ○ Yes ○ No

OR select a specific task breakdown below:

Develop drawings ☐

Develop drawings (SE) ☐

8374 Chicago, IL

1 Develop new
1.1 Information gathering (Dev)
1.1.1 Obtain prelim civils
1.1.2 Initial Site Visit & Report
1.1.3 reports
1.1.4 Confirm Developer requirements
1.2 Issue PWO
1.3 Production

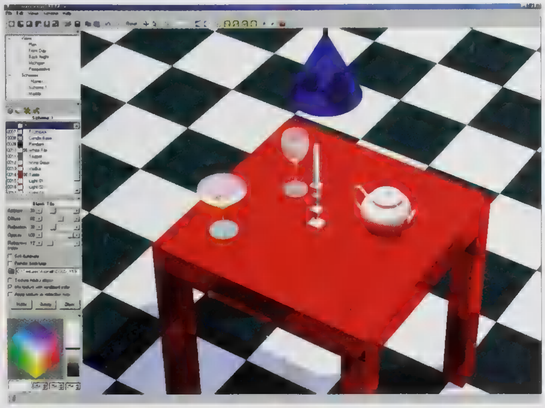
Issue	Status	Due	Age	Associated With	Assigned By
[illegible]		September 4, 2002	58 days	[illegible]	[illegible]

My Tasks

Project	Task	Status	Started	Finished	Comments	Attachments	Action Items
[illegible]	[illegible]	In Progress	7/11/02	[illegible]	(1)	[illegible]	[illegible]
[illegible]	Information gathering	In Progress	[illegible]	10/31/02	(2)	[illegible]	[illegible]
[illegible]	[illegible]	In Progress	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Issue PWO	Ready to Start	[illegible]	[illegible]	Add	Add	Add
[illegible]	[illegible]	Ready to Start	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	Issue PWO	On Deck	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Not Ready	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Powered by Thumbprint Web Server, version 1.9

3D files are viewed faster on the Internet as o2c objects.



IMAGES: © NEMETSCHEK N.A. (TOP); CYNTERGY TECHNOLOGY (MIDDLE); DATACAD (BOTTOM)

VectorWorks ARCHITECT 10

Nemetschek N.A.
410/290-5114
www.nemetschek.net

The latest version of Nemetschek’s architectural CAD package includes improvements in setup, productivity, presentation, and 3D tools. A new Standard Naming command allows users to select ARCHITECT’s layer and class names; the AIA/National CAD Standard names; or user-defined names based on firm conventions. A new 3D-modeling engine improves the speed and consistency of modeling operations, making them in some cases up to 10 times faster. Presentation improvements include the ability to fill 2D objects with images or gradient-blended colors. The 3D Power Pack includes tools and commands that were once separate from the software but are now fully integrated into VectorWorks. Users can create, connect, combine, and modify curves, contours, and complex surfaces.

Thumbprint

Cyntergy Technology
918/877-6000
www.cyntergytechnology.com

Thumbprint is a project-management tool that captures and remembers patterns in projects (e.g., lists of team members, schedules, client information) that can be leveraged in future work to avoid duplication and streamline tasks. Managers respond to interviewlike questions when setting up new projects; based on their responses, the Web-based software automatically builds adaptable project plans, schedules, lists of team members, and other information necessary to complete the work. Real-time status tracking across suites of projects is possible, and users can search projects for things like deliverable status or people with specific skills or time available. Users can create customized reports based on the information they enter into the system. An automated e-mail archive helps keep track of communication and decision making. The primary interface is a simple one-page desktop from which a user can access all project information.

o2c_Interactive!

DataCAD
800/394-2231 or 860/677-4004
www.datacad.com

The presentation tool called o2c_Interactive! makes sharing 3D information on the Internet faster and easier. The product name is an acronym for “Objects to See,” the compressed 3D file format in which images are saved. Designers can edit materials and textures used in the 3D objects they create (such as a room’s interior) and publish the results as an HTML file for online viewing. The o2c files can be sent as e-mail attachments or embedded in other documents, such as PowerPoint and Word files. DataCAD versions 9.06 and later can export 3D models directly to o2c. ■

www For more information on technology for architects, including vendor lists and links, go to Digital Architect at **architecturalrecord.com**.

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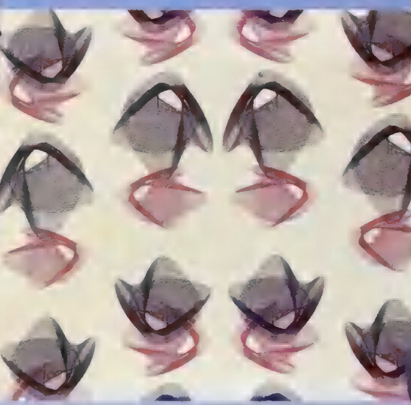

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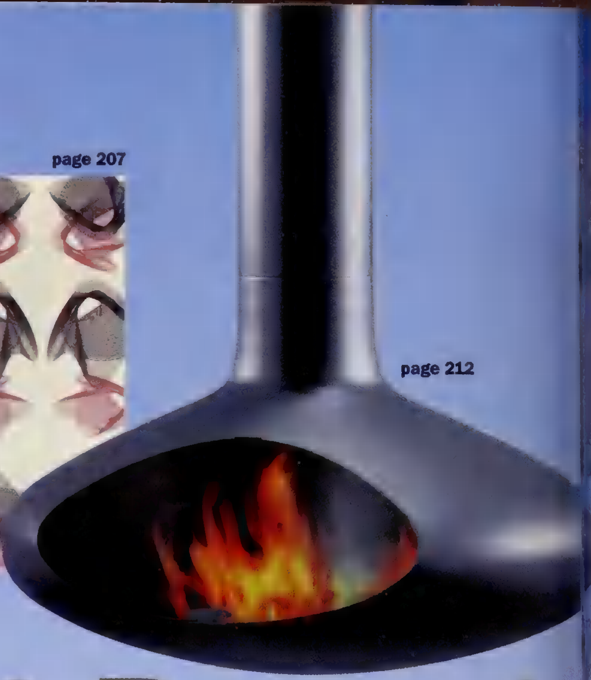

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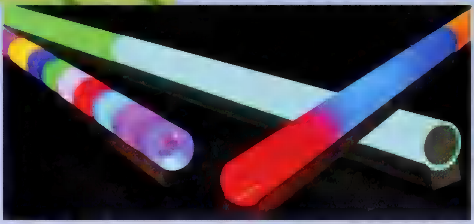
Product Reports



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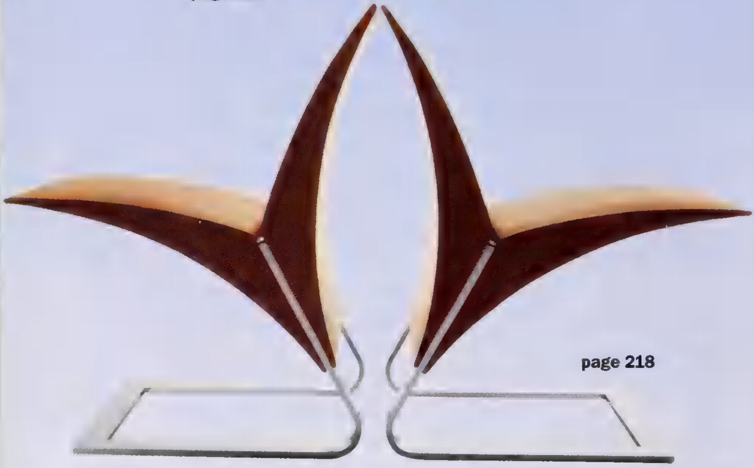

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While it's our goal each December to present the most innovative, well-designed new products to our readers, there isn't a scientific method to our selections. Our process is simple: We gather the product submissions, present them to a jury of design professionals, and publish their favorites from that group. The jury makes no endorsement of the products included, and there is no guarantee that every noteworthy product introduced into the marketplace this year was submitted by the manufacturer to be reviewed. As always, it is the process of actually specifying a product and seeing it perform in the real world that is the true test of its worth. We offer these products as merely a place to start on your own journey to find the right solution for your project.

Although the Finishes, Lighting, Doors & Windows, and Furnishings categories had the greatest amount of submissions, that doesn't always affect the outcome. The Equipment category, for example, had a modest number of submissions but was one of the favorites of the jury, with three full pages of new offerings ranging from sexy bath cabinetry and display equipment to intelligent, interactive audiovisual products. It's also interesting to note that if too many good products in a certain category are submitted in the same year (say, four different types of low-e glass), the jury may hesitate to select one to include in our Reports without further research.

RECORD's Annual Product of the Year Poll

Don't forget to visit our Web site during the month of December to once again vote for your favorite product of the year from a group selected by our editors. The winning product will appear on the Web site in January. Go to **www.architecturalrecord.com**.

25

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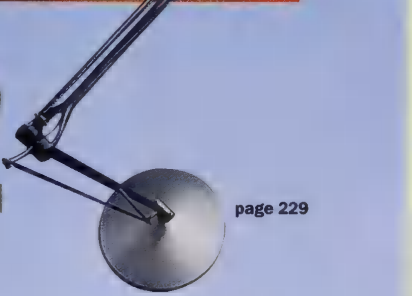
2002



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This year, two of the products that stood out for our jury (and our editors) reflected issues of particular concern for the U.S. at the moment—national security and water conservation. A product like RPI's Blastec explosion-resistant waste receptacle struck a chord with the jury for its potential to help architects design safer public spaces, while Duravit's waterless urinal can save roughly 14,400 gallons of water a day in a 40-story office building (based on 75 men per floor using 1.6 gallons of water three times a day)—a good idea in a year when most of the nation has been plagued by drought. Our jury was naturally drawn to these products because they help architects solve their clients' problems in a well-designed way. Shouldn't that be the goal of every product manufacturer?

Thanks to our jury and to all the building-product manufacturers who submitted this year. If you wish to share comments or suggestions regarding your product experiences this year or next, please let us know. Your feedback is invaluable. —Rita F. Catinella

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184 **Editors Picks**
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201 **Doors & Windows**
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212 **Specialties**
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223 **Special Construction & Conveying Systems**
225 **Mechanical**
229 **Electrical**

Product Reports 2002 Jury

Jerri Smith, AIA (seated), is a senior associate principle at Kohn Pedersen Fox Associates, in New York City. Most recently she worked on the new headquarters building for Gannett/USA Today in McLean, Virginia (completed in 2001), and William H. Gates Hall, the Law School at the University of Washington, in Seattle (under construction).

Lewis J. Goetz, AIA, IIDA (standing, far right), founder, president, and chief executive of Group Goetz Architects, in Washington, D.C., was recently elected to head the International Interior Design Association (IIDA). Goetz has won numerous local and national design awards and has worked for clients such as Mobil, Marriott International, the Smithsonian Institution, the AFL-CIO, Lucent Technologies, and the Kennedy Center.

Karen Singh, IIDA (standing, left of center), is an interior designer with Janson Design Group, in New York City. At the firm, Singh is responsible for the overall design on her projects, along with space planning, management of budgets, and coordination of projects with the various contractors. She is president of the New York chapter of the Resource Director's Association.

Richard Renfro, IES, IALD, LC (standing, right of center), is principal of Renfro Design Group, an architectural lighting design practice in New York City. Renfro's firm works extensively on museums, educational facilities, restoration projects, performing arts centers, and commercial buildings. Recently completed projects include Tod Williams Billie Tsien's Museum of American Folk Art and the restoration of Saint Thomas Church, both in New York City.

Michael Giardina, AIA (standing, far left), is vice president/senior designer at The Stubbins Associates, in Cambridge, Massachusetts. In addition to his corporate and commercial experience, Giardina has been involved for a number of years in Middle East projects, ranging from large, complex teaching labs to high-end speculative office developments.

Editors Deborah Snoonian, P.E., Sara Hart, William Weathersby, Jr., and Jane Kolleeny also helped in the judging.

JURY PHOTOGRAPHY: © SETH COHEN, EXCEPT WHERE NOTED

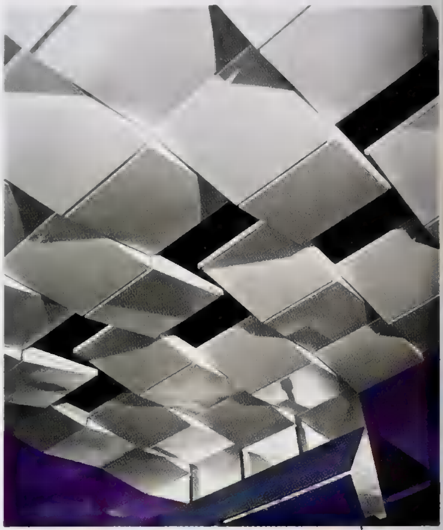
Editors' Picks

A baker's dozen of outstanding new products that captured our attention this year

Solarban 80 solar control low-e glass, PPG Industries. Doors & Windows, page 203.

Formaldehyde-free fiberglass, Johns Manville. Thermal & Moisture Protection, page 199.

Geometrix metal ceiling panels (shown) and Topo 3D panel system, USG Interiors. Finishes, page 207.



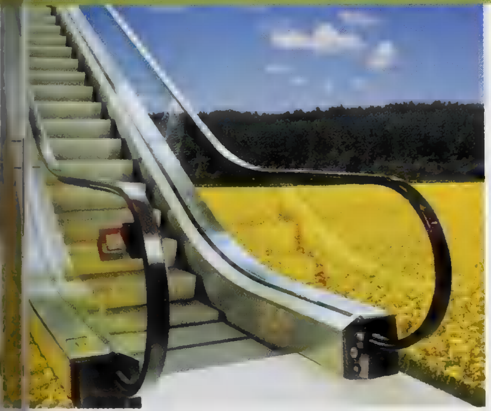
ED 220 steam-and-convection combination oven, Gaggenau. Equipment, page 215.

Blastec explosion-resistant waste receptacle, RPI. Sitework, page 192.

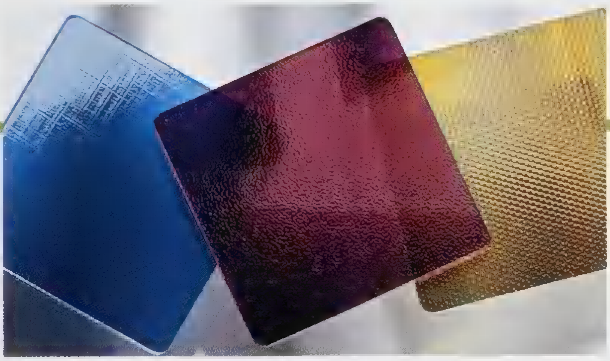
Aimed at the health-care market, Milliken's Soul carpet line is inspired by nature. [See RECORD, October 2002, page 261.]

Dream, Wave, and Shield Italian-designed security doors, Torterolo & Re. Doors & Windows, page 201.

Out of the many new products our editors encountered during the year, a few were singled out. The reasons vary—it could be because they were both "green" and clever at the same time, such as Duravit's McDry waterless urinal. Or they may have been money-saving appliances that weren't available residentially before, such as Whirlpool's Personal Valet clothes-revitalizing system. In most cases, however, they were products that offered simple design solutions while still looking attractive.—Rita F. Catinella



E 3000 escalator, KONE.
C veying Systems, page 223.



Three textured metallic interlayers can be combined with Solutia's range of Vanceva laminated glass colors. [RECORD, August 2002, page 224.]

Allsteel's #19 chair is easy to use, with only 18 primary components. [June 2002, page 221.]

Residential refrigerator with commercial-look glass door, Sub-Zero. Equipment, page 217.

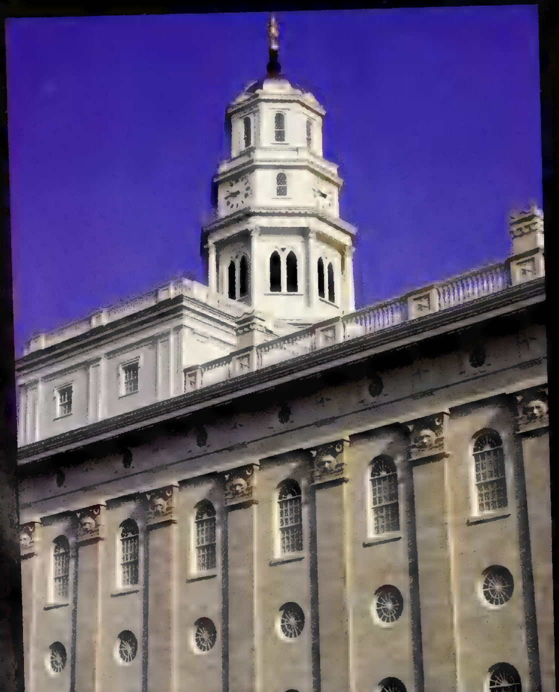
Personal Valet clothes-care system, Whirlpool Corporation. Equipment, page 216.

McDry waterless urinal, Duravit USA. Mechanical, page 226.

EDITOR PHOTO: © DAVID BEYDA

KEPCO+ Architectural Cladding Systems

Marble Institute of America Pinnacle Award winner for the Nauvoo Temple stonework



ph: 801.975.0909 www.kepcoplus.com fx: 801.975.9911

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General Data

Computer software • Computer systems • Design office equipment & materials • Electronic literature ▪ Web-based tools ▪ Handheld tools

> **This year's design tools range from the very handy, like AutoLayer/AutoLib, to the groundbreaking, like Architectural Studio and Plan2Model.** —DEBORAH SNOONIAN, P.E.

Printing passport

HP Remote Printing for AEC is a Web-based service for sending large-format print jobs to HP printers located anywhere in the world. No more sending large e-mails or overnight packages. 800/236-0757. HP, Palo Alto, Calif. **CIRCLE 200**

Squiggle technology

To lose that hard-edged look, Squiggle 5 lets architects quickly and easily create presentations of CAD drawings that look hand-drawn. New features include better handling of DWG and DXF drawings and greater support for HPGL and HPGL/2 plot files. Select individual colors, line weights, or Squiggle styles based on pen width or drawing layer. 925/249-0101. SignatureCAD, Pleasanton, Calif. **CIRCLE 201**

Electronic whiteboard device

Attach the mimio Xi device to any whiteboard, connect to your PC, and everything that is written and drawn is electronically recorded. Together with a projector, the mimio Xi also turns any whiteboard into an interactive touch screen, allowing users to control their desktop applications directly from the whiteboard. 877/MY-MIMIO. Virtual Ink, Boston. **CIRCLE 202**

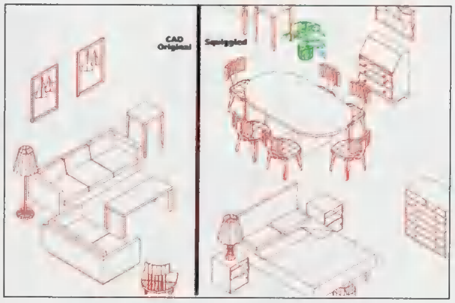
Online product library

BlueBolt is an online design resource that includes a library of 50,000 products and 53 leading brands, search and selection tools, color-true product images and specs, and online sample ordering connected directly to the manufacturer. 800/845-2511. BlueBolt Networks, Durham, N.C. **CIRCLE 203**

Traditional methods, digitally

Autodesk Architectural Studio recreates the architect's traditional studio in digital form by providing intuitive tools like pencils, markers, and trace paper that allow designers to sketch or model design concepts on a pen tablet or computer as they would by hand. 800/538-6401. Autodesk, San Rafael, Calif. **CIRCLE 204**

200



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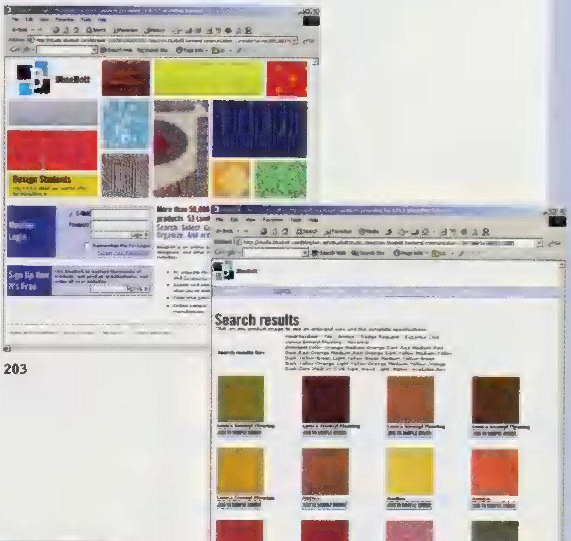

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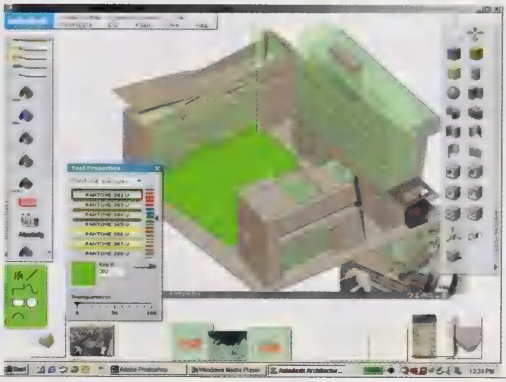


204

General Data

Computer software • Computer systems • Design office equipment & materials • Electronic literature • Web-based tools • Handheld systems

Management systems

AutoLib (shown) is a detail- and symbol-management utility for AutoCAD files. Features include a keyword search and thumbnail or enlarged viewing capabilities. Administrative settings control library creation and editing to ensure that only approved files make their way to drawing sheets. AutoLayer is a layer-management utility that ensures consistent layers in drawing files. Company or AIA/NCS standard layer names, color, line type, and line weight can be preestablished and individually or group inserted. 949/278-8473. ArchMedia, Irvine, Calif. **CIRCLE 205**

Handheld video player

TealMovie is a handheld multimedia system that can turn virtually any PalmOS handheld into a high-quality video and animation player. TealMovie supports smooth playback up to 60 frames per second (on supporting hardware), high-quality full-screen TrueColor or grayscale imagery, high resolution support, WAV file playback, and synchronized sound playback capability. 415/482-8325. TealPoint Software, San Rafael, Calif. **CIRCLE 206**

Color connection system

The Pantone system Architecture+Interiors allows designers to connect different categories within the industry, including carpets, fabrics, paint, flooring, fiber, furniture, and laminates. The system consists of 1,757 colors in cotton, paper, and digital formats, with a 203-color supplement of mostly whites and neutrals. 888/PANTONE. Pantone, Carlstadt, N.J. **CIRCLE 207**

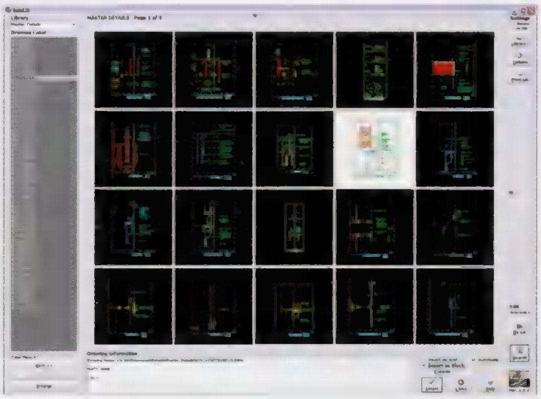
Copper info CD

The *Copper in Architecture* CD-ROM contains technical discussions, sample projects, details, and specifications on the application of architectural copper products. Details are AutoCAD-compatible for easy importing, or printable as PDF documents. 888/427-2411. Copper Development, New York City. **CIRCLE 208**

2D to 3D models

Plan2Model provides architects the option to turn 2D floor plans into 3D ArchiCAD models quickly and effectively. With this ArchiCAD 7.0 add-on, lines, arcs, and circles in 2D drawings are converted to objects in an ArchiCAD model automatically and/or semiautomatically. 415/703-9777. Graphisoft U.S., San Francisco. **CIRCLE 209**

205



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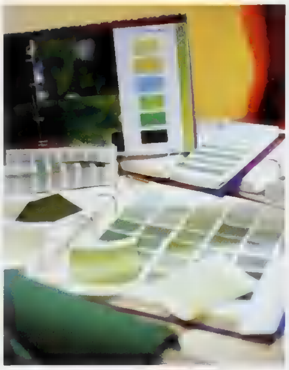

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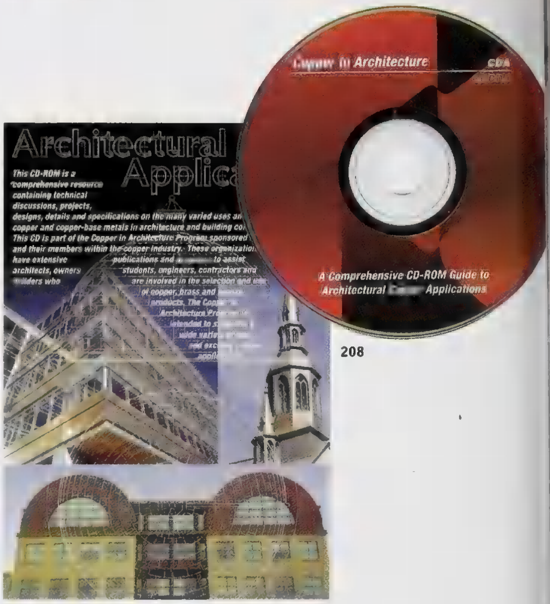
Copper in Architecture
Architectural Applica
A Comprehensive CD-ROM Guide to Architectural Copper Applications

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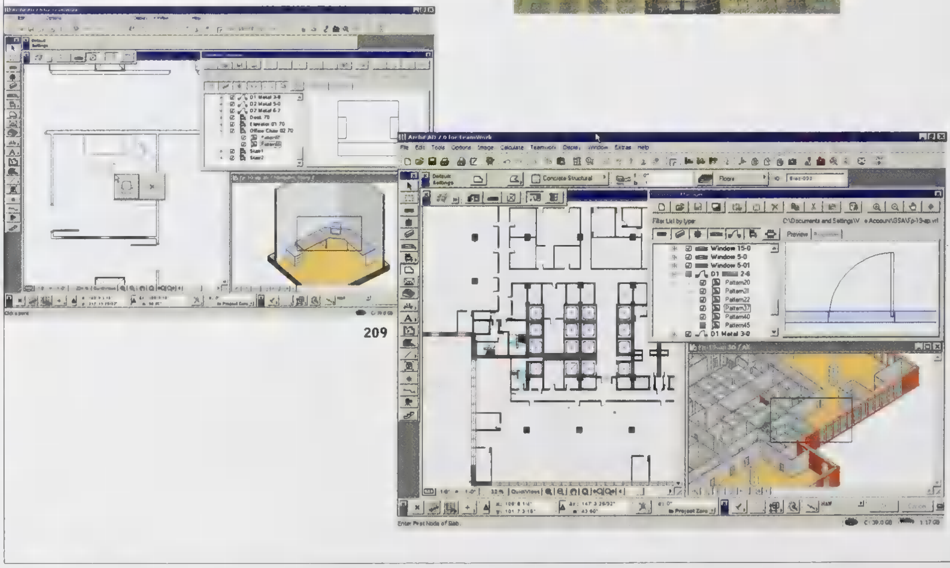

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When forest products
are your business,

planting 1.7 million trees every day is a
smart investment.

The Sustainable Forestry Initiative® program is dedicated to the future of the nation's forests, as well as the challenge of preserving rare and endangered forests around the world. Respect for nature and sound business practices are integrated to the benefit of the environment, landowners, shareholders, customers and the people they serve. And that allows us to meet the demand for wood and paper products, while helping to ensure our forests will be around forever.

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Ceramic Tiles of Italy

03

CERAMIC
TILES
OF ITALY
DESIGN
COMPETITION

design mrd

The Ceramic Tiles of Italy Design Competition 2003 is a special awards program sponsored by Assopiastrelle, the Association of Italian Ceramic Tile Manufacturers, and the Italian Trade Commission to recognize excellence in the design and installation of Italian ceramic tile. North American architects and interior designers are invited to submit commercial/institutional or residential projects featuring Italian ceramic tile. Submission Guidelines Entries may be submitted for projects completed between January 1, 1998 and February 1, 2003. Projects depicting domestic and international new construction and renovation are eligible. Completed submissions must be received no later than February 7, 2003. An international jury of design professionals will judge entries. One winning project in each category (commercial/institutional and residential) will be awarded a $5,000 check during Coverings 2003 in Orlando, Florida, March 24-27, 2003. Visit www.italiatiles.com or www.italytile.com for complete guidelines and to see previous award recipients. For further information call 718-783-3160 or email us at tileinfo@newyork.ice.it

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Sitework, Concrete & Masonry

Unit pavers • Form liners • Concrete materials • Site furnishings • Architectural precast concrete • Stone • Limestone • Masonry units

> **The Blastec explosion-resistant waste receptacle was an eye-opener about the kinds of issues that need to be addressed in the design world these days.** —*JERRI K. SMITH, AIA*

Decorative concrete

Ann Sacks offers three new limestone and concrete products for interior and exterior spaces. Saint Germain (far left) is an oversize limestone tile that recreates the look of traditional European stone cutting; Plaza (center) can handle various weather conditions; and Spool (far right) is a formed concrete lav for a rustic bathroom. 800/278-8453. Ann Sacks, Portland. CIRCLE 210

Pour it yourself

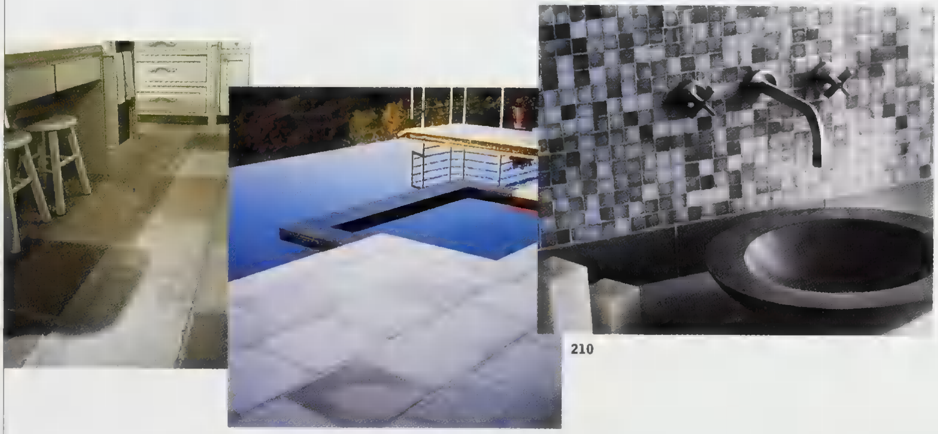
For the convenience of do-it-yourself concrete casting, Buddy Rhode's mix is made for home improvement enthusiasts and is suitable for kitchen countertops, bathroom vanities, and floors. The mix is made of 30 percent recycled materials and white cement, and it comes in six colors. 877/706-5303. Buddy Rhodes Studio, San Francisco. CIRCLE 211

"Stone" wall

Stone-Crete marries natural aesthetics with concrete structural capacities. A cast-in-place wall system that duplicates the look of natural stone in concrete, Stone-Crete has the structural capacity for retaining foundation walls, bridges, and dams. Unlike natural stone construction, it requires little or no maintenance and is available in eight deep relief patterns and a variety of colors. 800/752-4626. Increte Systems, Odessa, Fla. CIRCLE 212

Matching outdoor elements

For seating and space definition, the Chase Park collection is suitable for sidewalks, large plazas, and courtyards. The individual seats within the large bench frame personalize the bench for intimate settings. Both the bench and waste receptacle are rendered in cast aluminum with rugged steel frames for durability. 800/521-2546. Landscape Forms, Kalamazoo, Mich. CIRCLE 213



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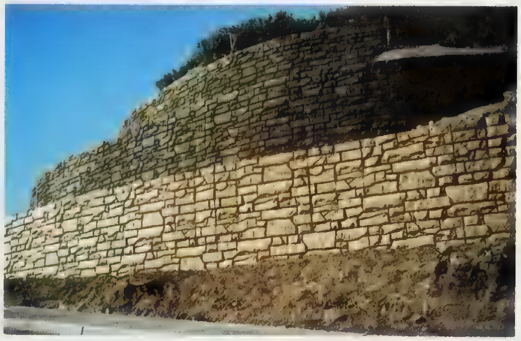

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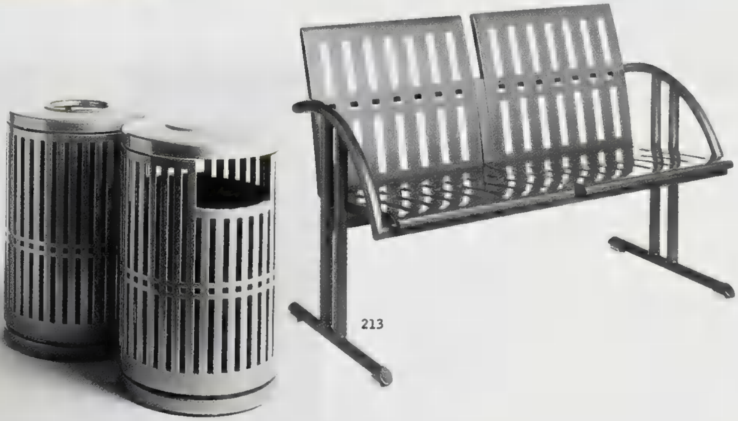


213

Sitework, Concrete & Masonry

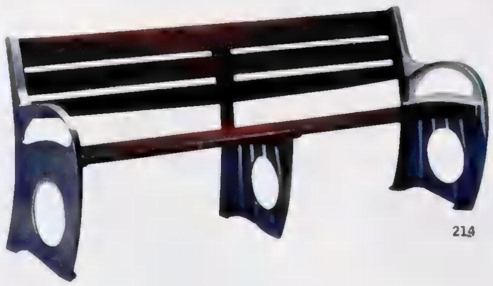
Unit pavers • Form liners • Concrete materials • Site furnishings • Architectural precast concrete • Stone • Limestone • Masonry units

Versatile public seating
The Leda Bench comes backed or backless, curved or straight, with or without armrests, and in an array of metal-finish colors. 800/451-0410. Forms+Surfaces, Carpinteria, Calif. **CIRCLE 214**

Protective terra-cotta
Eliminating sealants and caulking, the Alphaton terra-cotta rainscreen system provides thermal and moisture insulation, is made with 100 percent recycled materials, and resists extreme weather conditions. 516/656-0019. Shildan USA, Glen Cove, N.Y. **CIRCLE 215**

Clay pavers
For exterior pedestrian and light vehicular applications, Clay Street pavers feature a variety of sizes, edge options, and body colors. 800/5-BORAL-5. Boral Bricks, Roswell, Ga. **CIRCLE 216**

Safe cans
Blastec, an explosion-resistant waste receptacle, consists of an inner liner, an outer shell, and a core made of a shock-attenuating material. 989/635-7465. RPI, Marlette, Mich. **CIRCLE 217**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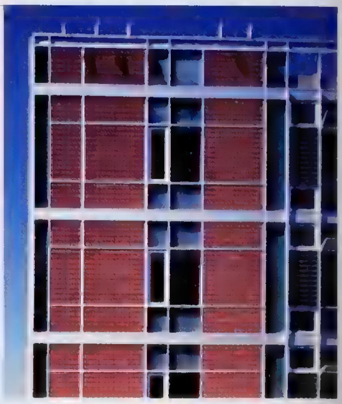
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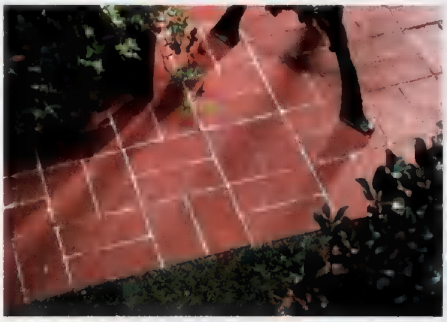
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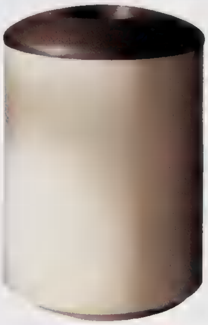
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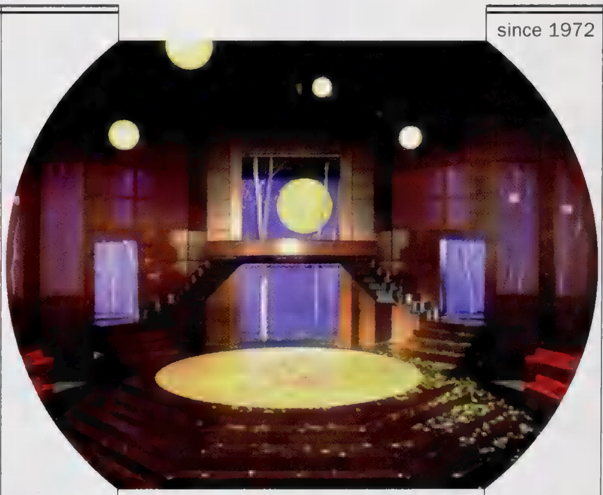
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The official Call For Entries explains the program's details in full. If you haven't received one by mid-December, please call (703) 620-0010, Ext. 105, or e-mail us at grgurich@bia.org, and we'll get one out to you.

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Metals, Wood & Plastics

Metal materials • Railings & handrails • Expansion joint cover assemblies • Lumber • Wood treatments • Laminated & processed sheets • Laminates • Plastic fabrications

> I was particularly impressed with the variety of new materials presented to the jury. It offers us, as designers, numerous options for our design solutions. —*LEWIS J. GOETZ, AIA, IIDA*

Mighty metals

These matte-textured high-performance sheet metals offer uniformity and flatness for fabrication into architectural panels. In both stainless-steel and titanium low-gloss finishes, the rolled-in textures aren't coated and will not deteriorate in harsh environments like seashores and urban areas. 866/360-5100. Contrarian Metal Resources, Cranberry, Pa. **CIRCLE 218**

Laminate chic

Millerighe's textured, design-driven high-pressure laminates come in 17 eye-catching hues. Colors to choose from include vibrant oranges, greens, and yellows, hot pink, and silver. 800/228-2238. Abet Laminati, Englewood, N.J. **CIRCLE 219**

Resilient resin

Varia is a high-performance and translucent resin that has 40 times the impact strength of glass; will not shatter, crack, or discolor; and can be contoured to any form. It can capture a variety of textures, from handmade papers to metal screens and woven mesh. 800/726-0126. 3Form, Salt Lake City. **CIRCLE 220**

Hardwood plywood/veneer

This line offers certified hardwood plywood and veneered particleboard (inset, center right), as well as Europly (below center), a premium plywood panel featuring a domestic hardwood face and a multilayered core composed of 60 percent imported Polish birch and 40 percent alder. 800/547-4261. Columbia Forest Products, Portland, Ore. **CIRCLE 221**

Kit of parts railing

No on-site welding, grinding, or extra finish work is required in the Silhouette Railing System. It works directly with project CAD files for parts fabrication, and assemblage is easy with adhesives and fasteners. 800/451-0410. Forms+Surfaces, Carpinteria, Calif. **CIRCLE 222**

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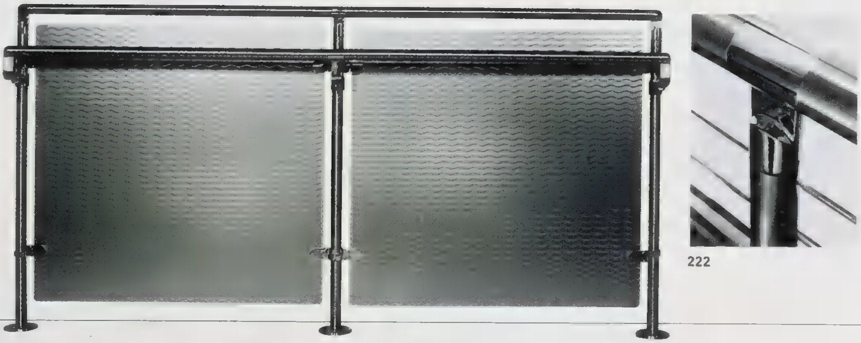

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Metals, Wood & Plastics

Railings & handrails • Expansion joint cover assemblies • Lumber • Wood treatments • Laminates • Plastic fabrications

Processed wood

CaLignum (top) is produced by a special process (below) that improves the density, hardness, tensile and impact strength, and compression and bending capacities of all species of wood. It offers an alternative to rain-forest wood and increases the areas of application of most species of wood. 203/227-9140. Lign Multiwood AB, Westport, Conn. **CIRCLE 223**

Steel rails

The Munich's design includes seamless handrails and a baluster with three oval tubes. Infill panel options include glass, and horizontal or vertical tubes in polished satin- or titanium-plated finishes. 630/860-2990. P&P Artec Stainless Steel Handrail, Wood Dale, Ill. **CIRCLE 224**

Transferring car weight

The aluminum KB Series joint cover is engineered specifically for use in parking structures and dynamic loading situations. With a patented turnbar load-transference system, the joint cover prevents damage and won't interfere with pedestrians. 888/621-3344. C/S Group, Muncy, Pa. **CIRCLE 225**

Pest defense

Now available in the U.S., Wolmanized Natural Select wood is pressure-treated with a copper azole solution composed of recycled copper and an organic fungicide for long-term resistance against termites and fungal decay. 770/801-6600. Arch Wood Protection, Smyrna, Ga. **CIRCLE 226**

Forest-friendly bamboo

Bamboo veneer and panels have options for flat or vertical grain, and natural and caramelized finishes. Bamboo complies with specifications of green design through its environmentally friendly harvest techniques and lamination adhesives. 800/929-6333. TimberGrass Fine Bamboo Flooring & Panels, Bainbridge Island, Wash. **CIRCLE 227**

Aussie wood

Boral Timber introduces 10 species, with colors ranging from deep red to pale pink to yellow. The species include: Alpine ash, Australian beech, Australian cypress, Heritage oak, jarrah, karri, Rose River gum, Spotted gum, Sydney blue oak, and Tasmanian oak. 800/BORAL-60. Boral Timber, Novato, Calif. **CIRCLE 228**

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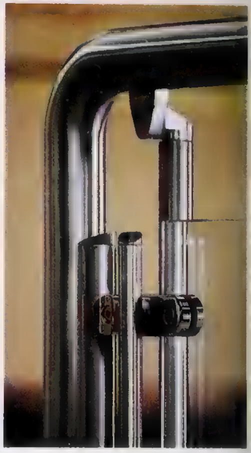

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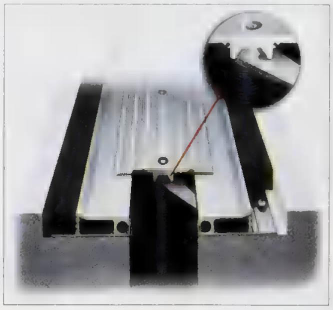

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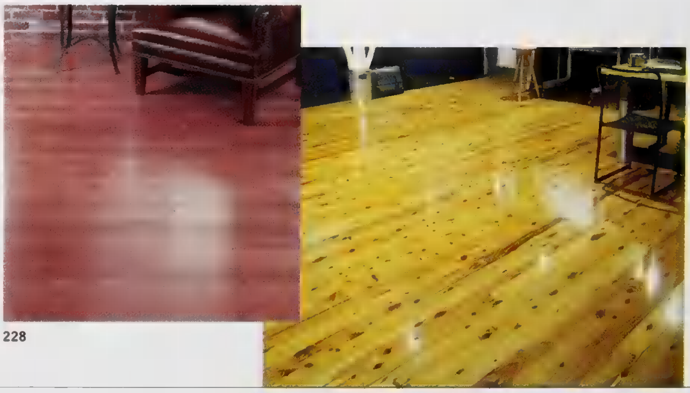

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It's terrific to see sustainability featured in so many new products. —*JERRI K. SMITH, AIA*

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ohns Manville will now manufacture a ne of entirely formaldehyde-free fiberlass building insulation for residential nd commercial use. The insulation features a binder composed of an acrylic esin rather than a phenol-formaldehyde inder. 800/654-3103. Johns Manville, enver. **CIRCLE 229**

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full line of Construction Specialities' ixed, drainable, and storm-resistant ntegrated louvers are designed to be ntegrated seamlessly into the Centria Dimension Series' joinery, sealing systems, and sight lines. 800/759-7474. Centria, Moon Township, Pa. **CIRCLE 230**

Zinc composite material
Reynobond ZCM is composed of two 22-gauge sheets of Rheinzink Titanium Zinc alloy permanently bonded to a fire-resistant core. 770/840-6456. Alcoa Cladding Systems, Norcross, Ga. **CIRCLE 231**

Aluminum plate panels
The Una-Fab Series 4000 Aluminum Plate Panel System is a true back-ventilated, pressure-equalized rainscreen system with sealant-free open joints. 800/426-7737. Copper Sales, Anokam, Minn. **CIRCLE 232**

Strong as an ...
OXTerminator is an oriented strand board with guaranteed protection against termites and fungal rot as well as demonstrated superior resistance to surface mold growth. OXTerminator employs a proprietary copper complex treatment that coats wood flakes prior to panel formation. 800/750-3850. Potlatch, Spokane, Wash. **CIRCLE 233**

Wind-activated vent
The X-5 ridge vent features the Active Weather Foil, a specially designed, wind-activated, weather-impenetrable valve that is permanently attached to the bottom layer of the system. 800/837-8368. Cor-A-Vent, Mishawaka, Ind. **CIRCLE 234**

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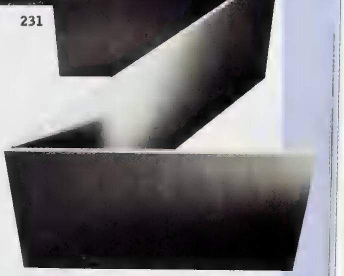

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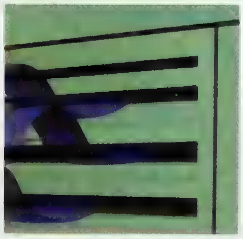

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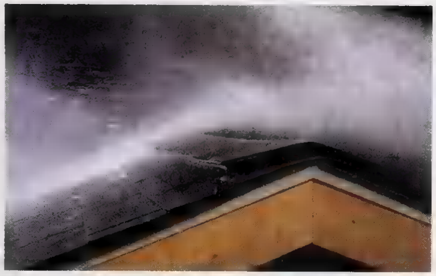

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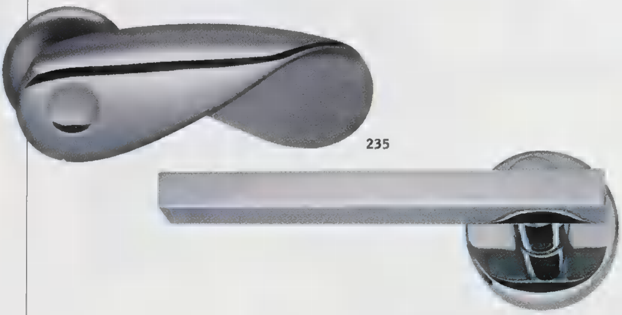
Doors & Windows

Metal/wood doors & frames • Security/sliding/automatic entrance doors • Fire-rated door assemblies • Windows • Skylight structures • Hardware • Glass/glazing

> **The John Pawson door lever by Valli & Valli has a good, classic modern design that is easy to integrate with other interior finishes.** —MICHAEL GIARDINA, AIA

Haute hardware

Door levers by Ron Arad (above) and John Pawson (below) offer varying geometric forms in the same finishes. Arad's designs are fluid and sinuous, while Pawson's lever features a combination of circles and straight edges. 877/326-2565. Valli & Valli, New York City. **CIRCLE 235**



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Multi-option windows

KML by Andersen architectural windows and doors offers options not readily available from most manufacturers. These include wood finishes, impact resistance for severe weather, custom shapes and sizes, and commercial-grade windows and doors. 800/426-4261. Andersen, Bayport, Minn. **CIRCLE 236**

236

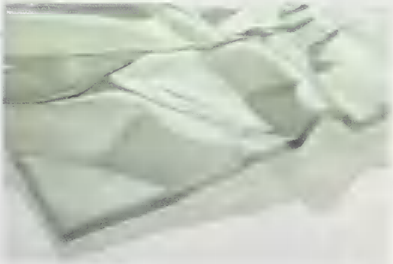
Smart door

This ESA sliding automatic door system uses a microprocessor for ultimate control: It self-monitors all door functions and adjusts itself automatically. The track eliminates operational noise and stops vibration resonance from being transferred onto building structures. Finish options include clear and anodized dark bronze. 877/DORMA-11. Dorma Automatics, Rearnstown, Pa. **CIRCLE 237**

237

Crumpled-paper texture

The Arrigado texture is an abstraction of folded paper that can be developed as a clear, frosted, matte, or colored-glass sheet in any Pantone color. It is available in tempered, laminated, or annealed glass, as well as thermal formed plastic. 888/505-GLASS. Joel Berman Glass Studios, Vancouver. **CIRCLE 238**



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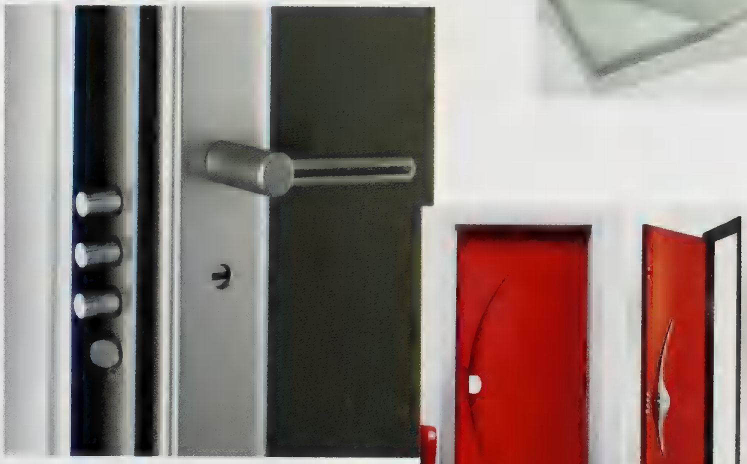
Racy security doors

Three new steel-clad security doors designed by car producer Pininfarina include Wave (right), Dream (center), and Shield (left). The Shield model features double-thickness galvanized sheet metal with high-security cylinder locks. 39 019 516901. Torterolo & Re, Cosseria, Italy. **CIRCLE 239**



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Doors & Windows

Metal/wood doors & frames • Security/sliding/automatic entrance doors • Windows • Skylight structures • Hardware • Glass/glazing

Sliding, rolling, and shielding

Pella's three new door and window products include the Architect Series Sliding Door (top), whose sliding panel has a tighter seal; the Rolscreen Patio Door (below), which allows 18 percent more light than standard screens; and Hurricane Shield Windows (center), which offer 100 times the rigidity and five times the tear resistance of common impact-resistant laminated glass. 888/84-PELLA. Pella, Pella, Iowa.

CIRCLE 240

Missile tested

Storm Front high-impact-resistant framing and entrance systems can withstand the impact of high winds and wind-borne debris. The systems meet Miami-Dade County protocol and have been large-missile-impact and cycled tested. 800/627-6440. United States Aluminum, Waxahachie, Tex. **CIRCLE 241**

Security at the wave of a wand

The Dialock locking system features an advanced transponder technology for applications that include fitness centers, banking, offices, and health care. With software tools, up to 30,000 keys and 10,000 openings can be managed. 888/437-7477. Hafele, Archdale, N.C.

CIRCLE 242

Continuous color

FractalGlass is created by laminating an interlayer of continuous tone color imagery between two sheets of glass. The glass, impervious to the elements, can be used indoors or out in dimensions that can span a building facade. 800/275-7272. Cesar Color, Phoenix.

CIRCLE 243

Large-span acrylic sheets

Reynolds Polymer Technology can use its single-pour casting method to manufacture crystal-clear acrylic in almost any shape, size, and color for an array of architectural projects. 800/433-9293. Reynolds Polymer Technology, Grand Junction, Colo. **CIRCLE 244**

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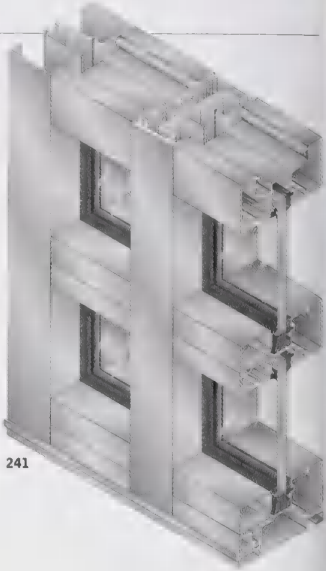

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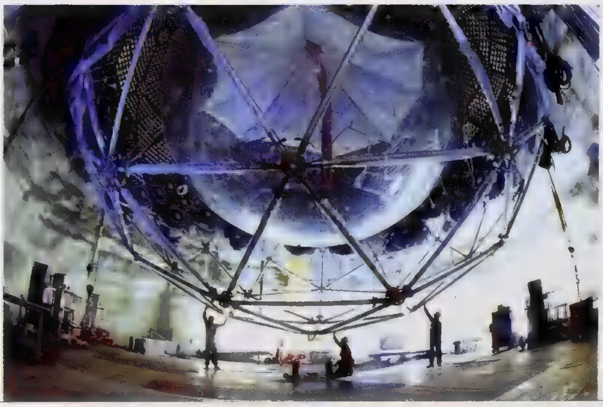

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Doors & Windows

Metal/wood doors & frames ▪ Security/sliding/automatic entrance doors ▪ Windows ▪ Skylight structures ▪ Hardware ▪ Glass/glazing

Antireflective glass

Shown here at the Eiffel Tower Restaurant at the Paris Hotel in Las Vegas, Schott's Amiran antireflective glass is available with a low-e coating for improved solar performance. 914/378-3839. Schott Corporation, Technical Glass Division, Yonkers, N.Y. **CIRCLE 245**

Tough and traditional

Marvin has added new features and options to its Sliding French door, including extra-wide 4¾" stiles and a tall 8⅛" bottom rail to achieve a traditional look and profile. 888/537-8266. Marvin Windows and Doors, Warroad, Minn. **CIRCLE 246**

Tested terrace door

Thermally broken throughout, Kawneer's 2000T Terrace Door is fully tested, including for large- and small-missile-impact resistance. 877/767-9107. Kawneer, Norcross, Ga. **CIRCLE 247**

Flexible curtain wall

A new curtain-wall system from Extech/Exterior Technologies accepts both glass and cellular polycarbonate glazings. 800/500-8083. Extech/Exterior Technologies, Pittsburgh. **CIRCLE 248**

Fire-rated wood doors

Eggers fire-rated wood doors feature concealed and surface vertical rods with no metal meeting edges. The doors also offer up to 90-minute fire ratings and standard swing or double egress. 920/722-6444. Eggers Industries, Neenah, Wis. **CIRCLE 249**

Cool glass

PPG claims that Solarban 80 coated clear glass in a 1" insulating unit has the best balance of high visible light transmittance (47 percent) and a low solar-heat-gain coefficient (0.23) in architectural glazing today. 800/377-5267. PPG Industries, Pittsburgh. **CIRCLE 250**

Blind vision

The Vison Control hermetically sealed glass unit controls energy and light transfer and is custom-made to suit the architect's glazing needs. Vision Control's self-reversing blinds eliminate risk of mechanism breakage, while its 2" air-space provides acoustical performances. 800/668-1580. Unicel Architectural, Longueuil, Quebec. **CIRCLE 251**

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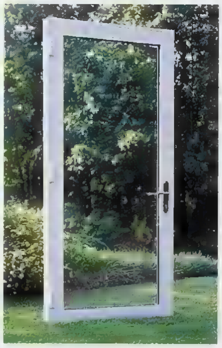

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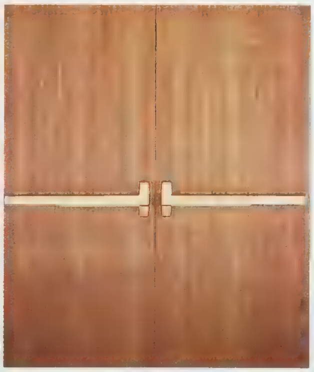

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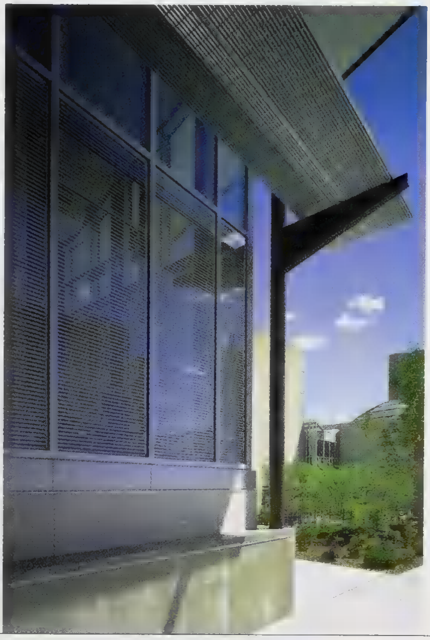

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Doors & Windows

Metal/wood doors & frames • Security/sliding/automatic entrance doors • Windows • Skylight structures • Hardware • Glass/glazing

Stainless-steel/bronze pulls

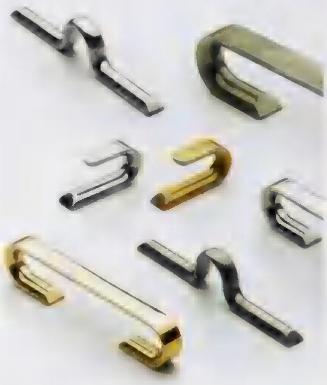
Designed by furniture designer Don Chadwick, the Circuit Collection of door pulls, cabinet pulls, and coat hooks is cast in solid stainless steel or bronze. 800/451-0410. Forms+Surfaces, Carpinetria, Calif. **CIRCLE 252**

Fire-rated hardwood framing

Technical Glass Products has added fire-rated hardwood framing and doors to their Fireframes line, providing an alternative to traditional hollow metal steel frames. The frames are available in a wide variety of wood species and come in complete packages for easy installation. 800/451-9857. Technical Glass Products, Kirkland, Wash. **CIRCLE 253**

Intelligent daylighting system

ControLite is a glazing panel with built-in intelligent light controllers that reduce solar heat gain during peak sunlight hours and hot summer months while providing maximum light when most needed. 800/759-6985. CPI International, Lake Forest, Ill. **CIRCLE 254**



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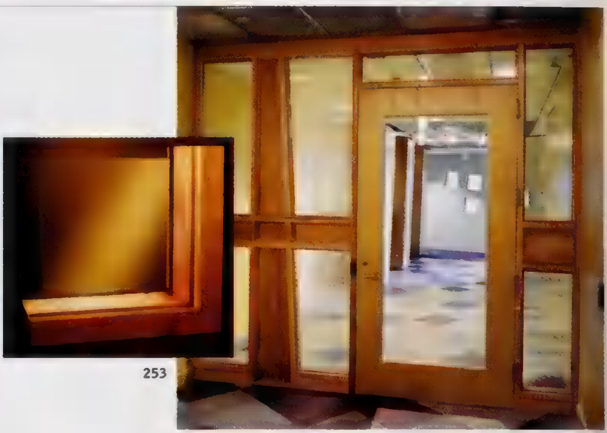

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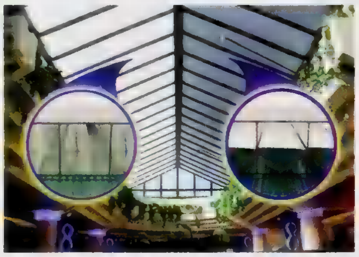

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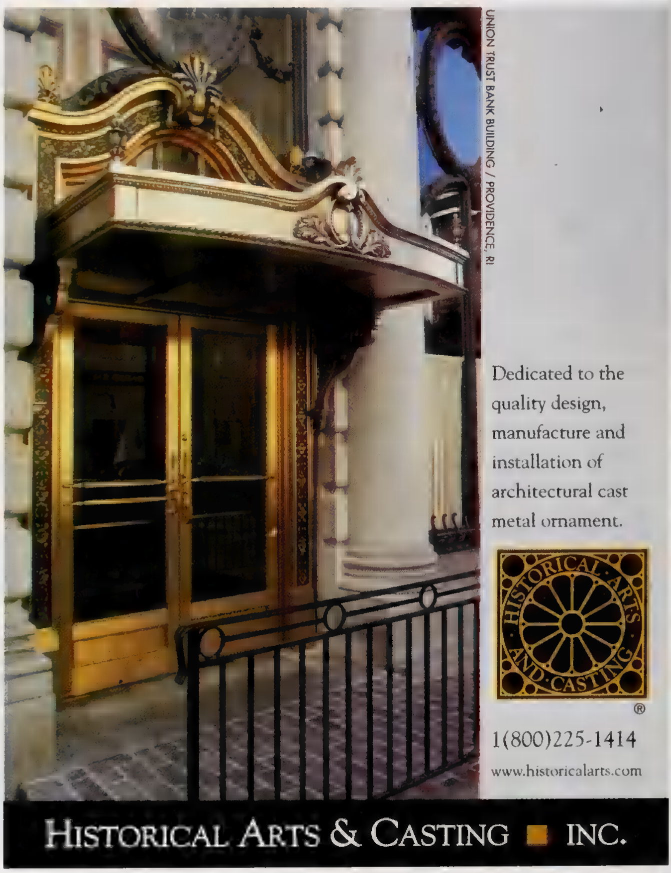

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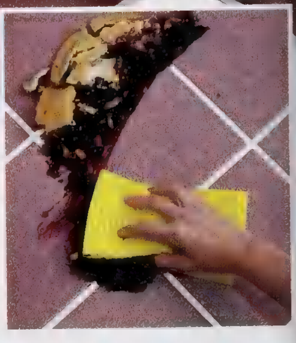

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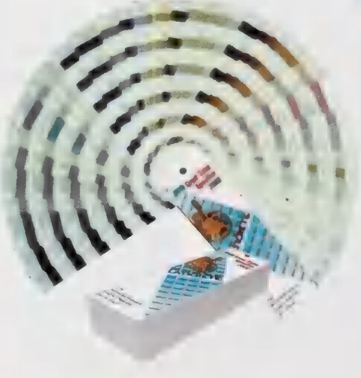

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Ceiling suspension • Ceramic/metal tile • Special ceiling surfaces • Resilient flooring • Wall coverings • Carpet tile • Sheet carpet

> **Bentley's Industry is not overpowering or aggressive, but it makes a statement that is both fun and sophisticated.**
>
> —KAREN D. SINGH, IIDA

Rolling ceilings

The Topo 3D system (left) consists of preformed translucent and opaque Lexan infill panels installed into a curved suspension system. The infill panels are designed in four panel modules to create the appearance of gently rolling curves. The 2' x 2' Geometrix metal ceiling panels (right) are available in four profiles: flat, wedge shaped, and wedge shaped with either inside or outside corners. 800/874-4968. USG Interiors, Chicago. **CIRCLE 255**

Digital nature

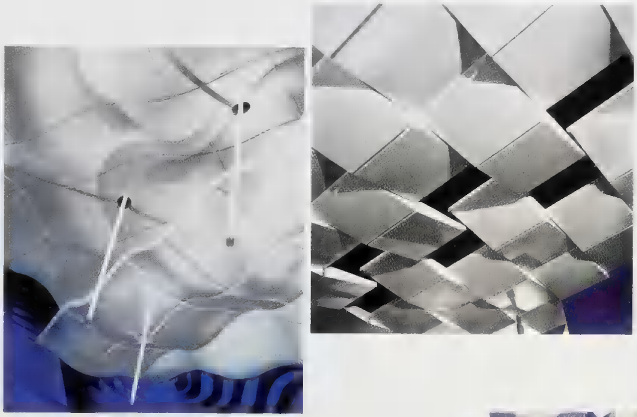
Karim Rashid designed these commercial wallcoverings as an exploration of patterns that occur in nature. The designs mimic plant, animal, landscape, and human structures in abstract 2D forms and were generated with digital design tools. 800/347-0550. Wolf-Gordon, Long Island City, N.Y. **CIRCLE 256**

Mostly metal

Steel and brass pieces are molded into an eclectic mix of shapes, sizes, and finishes in Metallismo's metal tile collection. The tiles blend a variety of interior fashion motifs, with monochromatic and industrial design themes. Each metal piece is rubber-backed to prevent conductivity, and mosaics are mesh-mounted for easy installation. Metallismo is appropriate for both commercial and residential applications. 877/611-0199. Walker Zanger, Sun Valley, Calif. **CIRCLE 257**

Colorful collection

Paola Lenti's variety of new fabric colors and patterns can be coordinated with the firm's collection of carpets, felts, tapestries, and seating. Completely handmade of New Zealand wool, the area carpet range is available in various designs and 160 shades. All the creations in the printed felt collection can be customized according to taste and requirements. 888/545-5073. Counterpoint Design Resource, El Paso, Tex. **CIRCLE 258**



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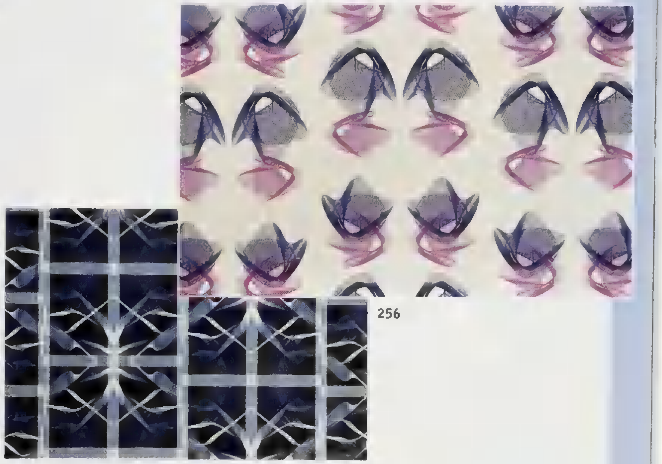

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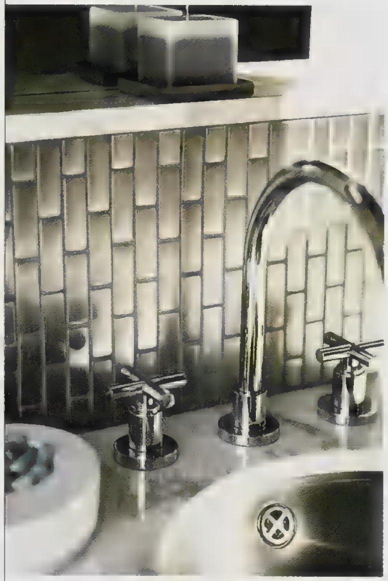

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Finishes

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Get floored

Floored is a 4" geometric pattern with bold linear stripes of color and texture that is appropriate for corporate, retail, and hospitality spaces. 800/859-9558. Invision Carpet Systems, Dalton, Ga. **CIRCLE 259**

Vinyl style

The newest incarnation of the Plynyl collection from Chilewich includes three patterns—dots, dashes, and squares—in five muted metallics. Originally developed last year with architect Joe Sultan, Plynyl features a woven vinyl textile bonded to cushioned polyurethane that provides durability and an array of textures and new patterns. 212/679-9204. Chilewich, New York City. **CIRCLE 260**

Put some cork on it

Kroma and Basix are two new cork flooring collections from To Market. Kroma is a series of 12 engineered colorations that create a subtle metallic and pearlized visual effect. Basix features a natural flat texture washed with muted color by a color-stain technique. 877/843-8184. To Market, Los Angeles. **CIRCLE 261**

Comfortable ceramics

The warm-colored Habitat porcelain tile series from Diago imitates the texture of fabrics, allowing for wall finishes with the look of fine linens but with the ease of maintenance of ceramic. 800/351-0038. Hastings Tile & Il Bagno Collection, Freeport, N.Y. **CIRCLE 262**

Modern mosaics

Alloy is a stainless-steel mosaic that offers a contemporary spin on the classic mosaic wall. In mirrored or brushed finishes, these tiles are available in a variety of sizes and provide a glittery dramatic backdrop to any room. 800/278-8453. Ann Sacks, Portland, Ore. **CIRCLE 263**

Saran wrap

Saran is dimensionally textured with true color, patterns, and grain characteristics to match real wood. Saran is a Class 1 product and can be used for interior and exterior applications. It is applied to Ceilings Plus preengineered accessible ceiling and wall panels and can be perforated for acoustical noise reduction. 800/822-3411. Ceilings Plus, Los Angeles. **CIRCLE 264**

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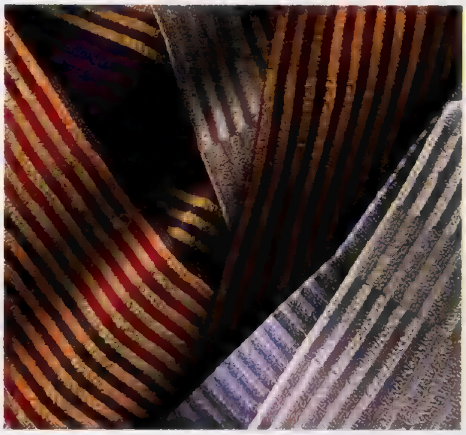

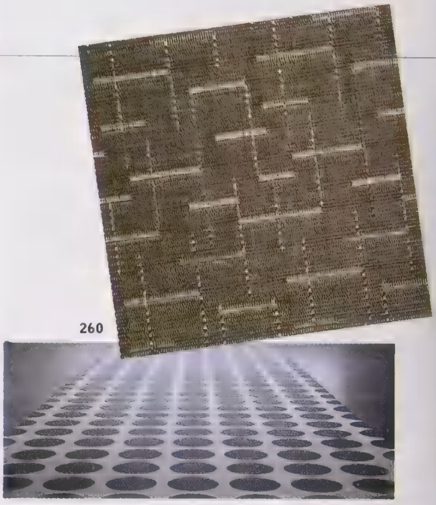

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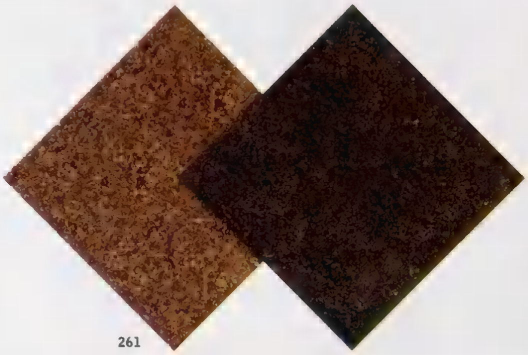

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Throughout history, artists like Spain's Joan Miró have added new dimensions to their unique works with the creative use of ceramic tile. Like Miró, the tile manufacturers of Spain are regarded as masters of their craft. For centuries, they have combined a history of craftsmanship and quality with forward-thinking technologies.

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Miró's tile mural, Mur du Soleil (1957), at the UNESCO Building in Paris, France.

TILE OF SPAIN

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Forget furniture

Salto is a handwoven rug composed of individual loops made from 100 percent wool. Corale (shown) is a rug whose name derives from the unique look of its tufted fibers, also 100 percent wool. 505/266-5245. Ideas for Living, Albuquerque. **CIRCLE 265**

Decorative underlayer

The Levelrock Proflow is a high-strength gypsum underlayment and is the first that can be used as a decorative finished floor in heavy-use commercial applications. 800/487-4431. Industrial Products Division, USG Corporation, Chicago. **CIRCLE 266**

Mutina ambience

Mutina ceramics are available in a variety of softly colored tiles and shapes ranging from sleek rectangles to chunkier squares. These Italian-manufactured tiles are for both commercial and residential uses. 212/980-1500. Italian Trade Commission, New York City. **CIRCLE 267**

Molto mosaics

Ceramica di Treviso offers five mosaic styles including Nature, Crystal, Vetrofuso (cast glass), Mediterraneo, and Textures (shown). The mosaics measure approximately 1" x 1" and 2" x 2" and are affixed to a grid in a multitude of colors and decorations. 212/980-1500. Italian Trade Commission, New York City. **CIRCLE 268**

Linear loops

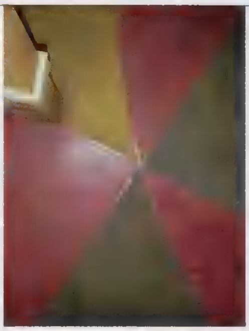
Available in 13 colors ranging from soft naturals to full jewel tones, Dhurrie features a clearly defined linear design incorporating a range of cut-loop textures. 770/877-6000. Bolyu Contract, Adairsville, Ga. **CIRCLE 269**

Posh plaster

Armourcoat Polished Plasters are trowel-applied decorative finishes in more than 256 colors that give the appearance of a seamless stone surface. 800/886-3626. Armourcoat Surface Finishes, North Providence, R.I. **CIRCLE 270**

Carpeting for purists

The broadloom installation for Industry (shown) appears as a distinct plane defined by color, without distractions of texture or pattern. 800/423-4709. Bentley Prince Street, City of Industry, Calif. **CIRCLE 271**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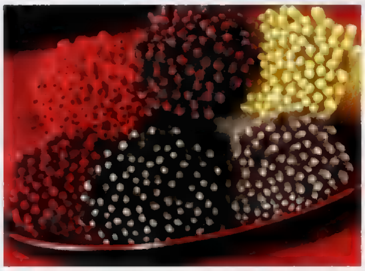
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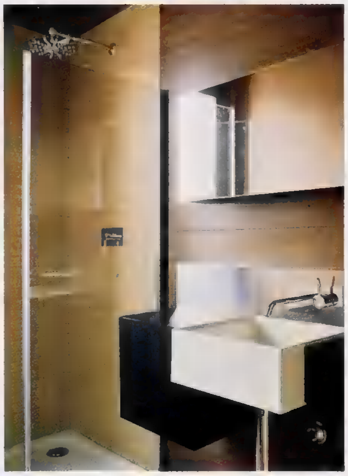
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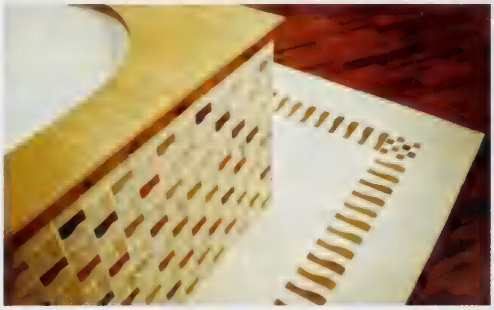
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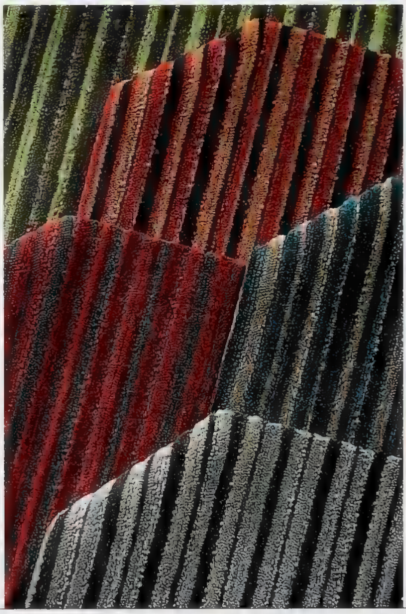
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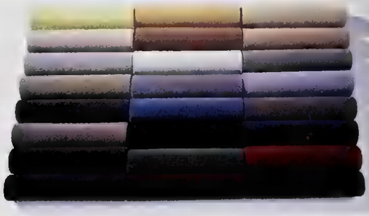
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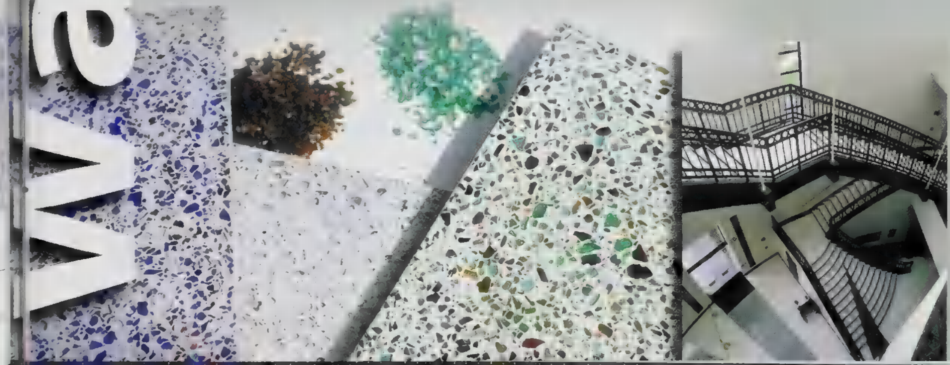

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> **The Wharton lectern incorporates most of the necessary functions and is easily incorporated into most contemporary installations.** *—MICHAEL GIARDINA, AIA*

Tactful tackboard

PINnacle, an upgraded tackboard that needs no additional finishing, is appropriate for architects' offices, schools, museums, and all public buildings. 800/257-9491. Homasote Company, West Trenton, N.J. **CIRCLE 272**

Floating fire

The Fireorb fireplace, designed by Chicago architect Doug Garofalo, AIA, is made of steel spun into a CAD-governed form and is engineered to be hung easily from any ceiling. The 16" x 10" opening rotates a full 360 degrees on a ball-bearing system, and the piece can hang from any ceiling with a flue up to 40' in length. Fireorb is tested and approved to UL standards for the U.S. and Canada. 847/454-9198. Fireorb, Prospect Heights, Ill. **CIRCLE 273**

The awning of a new age

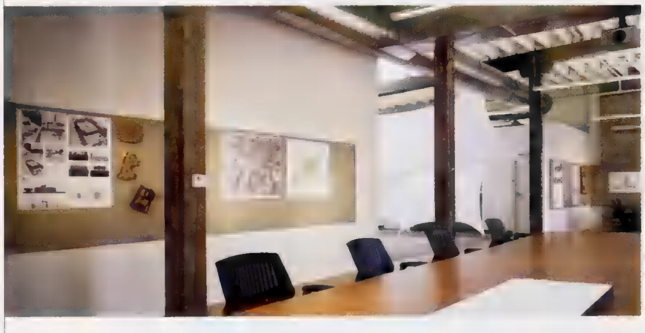
Using a variety of metals, nontraditional fastening techniques, and blends of fabrics, Architectural Fabric Structures creates contemporary awnings, canopies, shade structures, and sculptures. 415/289-0457. Architectural Fabric Structures, Sausalito, Calif. **CIRCLE 274**

Keep students awake

The Wharton lectern features electronic height adjustments and a panel to manipulate room lighting, audio, and video. The user can access the Internet and LAN directly from the lectern, control cameras located in the room, and store "user preferences." The lectern is suited for college and university markets, corporate auditoriums, large training rooms, and conference facilities. 800/424-2432. KI, Green Bay, Wis. **CIRCLE 275**

Movable walls

Smed's new LifeSpace movable office fronts feature no visible panel-to-panel connections by incorporating slim, single, vertical frames in aluminum or wood. 800/661-9163. Smed International, Calgary, Canada. **CIRCLE 276**



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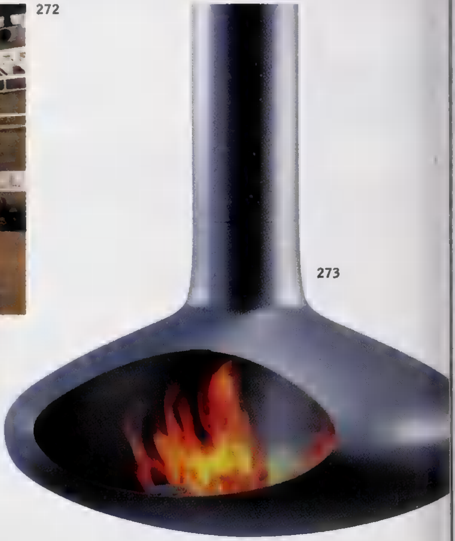

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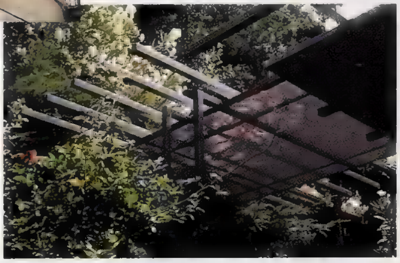

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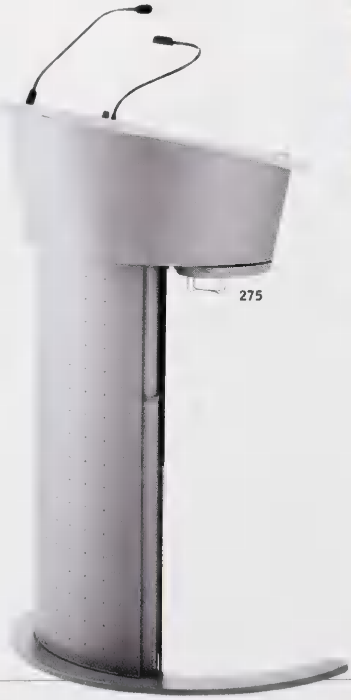

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Piano designed pieces

The Lacciolo Collection of bath accessories by Renzo Piano features a teardrop shape and chrome and knurled-chrome finishes. 877/326-2565. Valli & Valli, New York City. CIRCLE 327

Steel-reinforced access floor

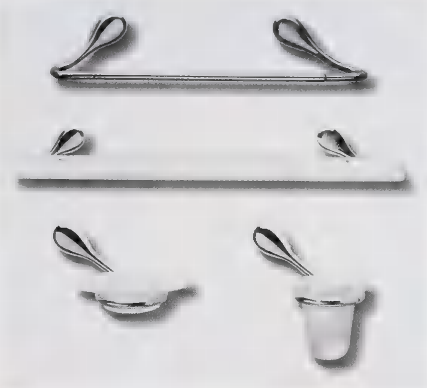
The TecCrete XL access floor system has an advanced concrete mix that creates a 20 percent lighter floor. 888/977-1099. InterfaceAR, Grand Rapids, Mich. CIRCLE 328

Sun shade

The 1600 SunShade integrates with inside or outside-glazed curtain-wall systems, shades interiors, and conserves energy with a 30" projection. 877/767-9107. Kawneer, Norcross, Ga. CIRCLE 329

Fire monitor system

The SafeLINC communications link enables building managers and owners to use the Web to monitor fire-alarm systems off-site. 800/746-7539. SimplexGrinnell, Westminster, Mass. CIRCLE 330



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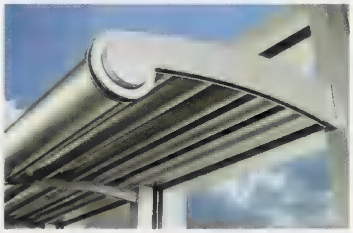

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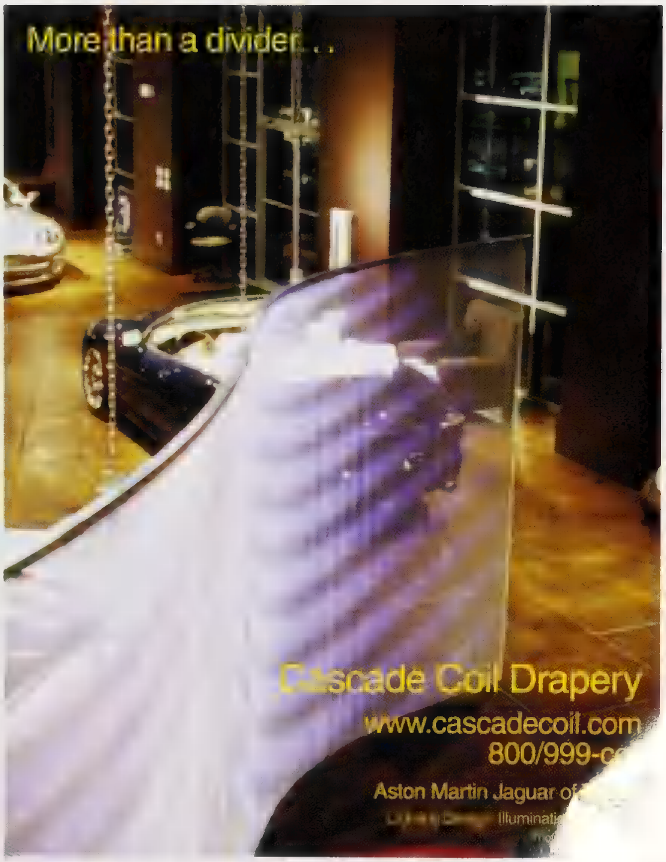

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Equipment

Central vacuum-cleaning systems • Merchandising/display equipment • Audio/visual equipment • Residential appliances • Kitchen/bath cabinets • Countertops

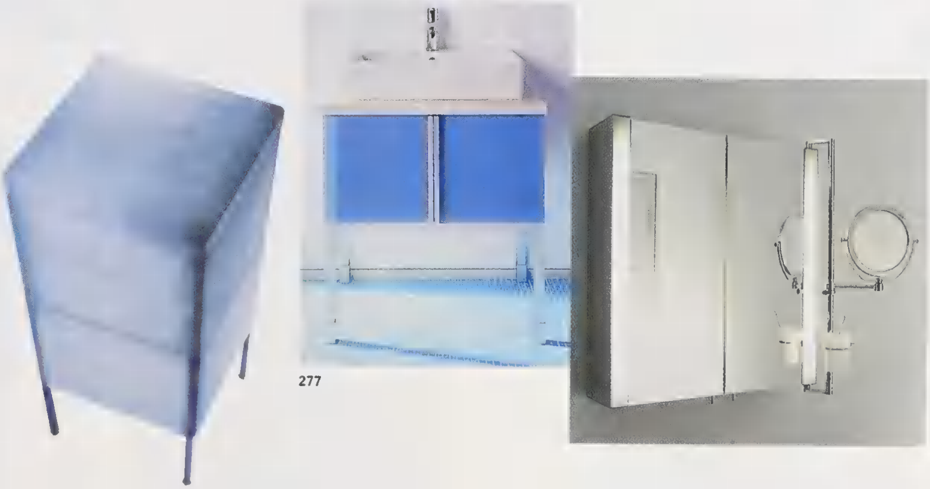
> **Sub-Zero's glass door feature is a welcome addition that provides a refined, commercial look without the bulk typical of a commercial refrigerator.** —*MICHAEL GIARDINA, AIA*

Cabinetry triad
Designed by Philippe Starck in plastic—a new material to Duravit—Jelly Cube (left) features a "slot-in" assembly that requires no tools. One-, two-, or three-door vanity units are offered from Duravit's In the Mood collection designed by Sieger Design (center). Also designed by Sieger, Multibox (right) is a two-door mirror cabinet in an aluminum finish with integrated side-lighting strips. 888/DURAVIT. Duravit USA, Duluth, Ga. **CIRCLE 277**

Lofty aspirations
For Loft is a new kitchen and bath collection by Kallista. Designed by Michael Smith to blend into contemporary environments, including industrial, loftlike apartments and homes, the centerpiece of the collection is a full-size kitchen island with adjustable poles reaching all the way to the ceiling. A smooth Carrara marble countertop surrounds an oversize, undercounter-mounted fireclay kitchen sink. 920/457-4441. Kohler, Kohler, Wis. **CIRCLE 278**

Culinary communications
The iCEBOX, a Web-enabled kitchen entertainment center, provides access to information, communication, and entertainment by combining cable TV, Internet and e-mail, DVD/audio CD player, and home video monitoring in one package. The FlipScreen iCEBOX fits conveniently under a standard kitchen cabinet and is broadband-enabled. 877/463-7637. iCEBOX, Seattle. **CIRCLE 279**

Spa cuisine at home
The ED 220 is a steam-and-convection combination oven that combines the dry heat of a convection oven with nonpressurized steam in precisely calibrated proportions. The steam generator produces four different degrees of humidity in the oven, with a mist button providing an extra burst of steam at critical moments. 800/828-9165. Gaggenau, Huntington Beach, Calif. **CIRCLE 280**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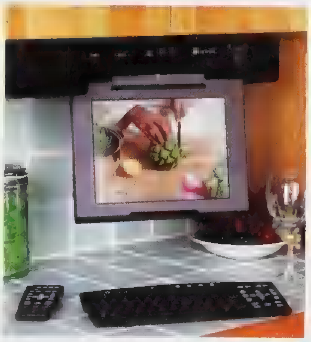
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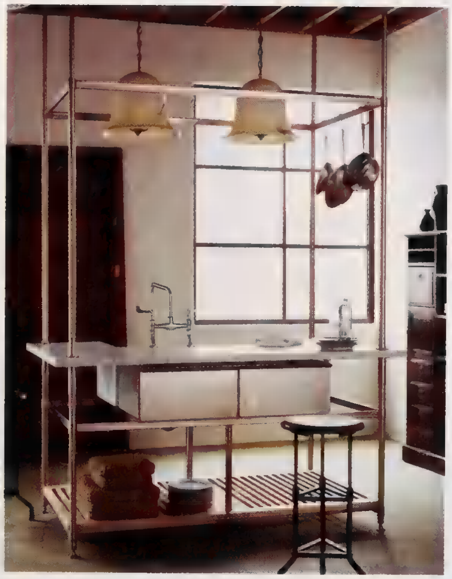
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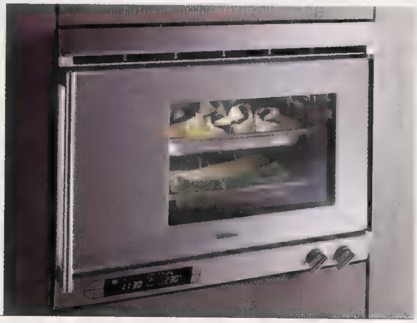

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Equipment

Central vacuum-cleaning systems ▪ Merchandising/display equipment ▪ Audio/visual equipment ▪ Residential appliances ▪ Kitchen/bath cabinets

Dry cleaning replacement

The Personal Valet clothes vitalizing system effectively removes wrinkles and cleans away odors in virtually all types of fabrics in about 30 minutes. It is designed to fit easily into laundry rooms, bedrooms, or standard-size closets. 800/253-3977. Whirlpool Corporation, Benton Harbor, Mich. **CIRCLE 281**

Wash it in the sink

Briva, the industry's first in-sink dishwasher, is capable of cleaning small loads up to three times faster than standard full-size dishwashers. Briva, sized to fit a 42" or 48" cabinet, is a double sink with one side of the sink housing the dishwasher. 800/253-3977. KitchenAid, Benton Harbor, Mich. **CIRCLE 282**

Gourmet clean up

The Chef's washer for gourmet cookware features adjustable nylon-coated racks that are spaced for flexible loading of different size cookware. The deep lower rack accommodates items up to 15" high, and extra wheels provide stability for large, heavy loads. 800/626-2000. GE Appliances, Louisville. **CIRCLE 283**

A visible difference

The Visible display case has applications for retail, residential, and gallery spaces. The showcase is made of 6 millimeter clear or frosted tempered glass, and the frame is silver lacquered steel, with adjustable feet in the standing model. A horizontal and vertical wall-hung version is also available. The interior shelves can be inclined for special presentations, and the showcases can be custom designed. 415/543-5466. Limn, San Francisco. **CIRCLE 284**

Spend time in the kitchen

Developed on a horizontal plane with decisive lines, the TIME kitchen system features raised base units, a stainless-steel hood, and a work top that houses cooking utensils. 877/SNAIDERO. Snaidero USA, Torrance, Calif. **CIRCLE 285**

Central vac system

To create lightweight, powerful cleaning, better air quality, and less noise, the Beam Central Vacuum's power unit is typically located in the basement and connected to inlets throughout the home via vacuum tubing. 800/947-2326. Beam Industries, Webster City, Iowa. **CIRCLE 286**

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Equipment

Central vacuum-cleaning systems ▪ Merchandising/display equipment ▪ Audio/visual equipment ▪ Residential appliances ▪ Kitchen/bath cabinets

A peek inside the fridge

Sub-Zero introduces a new refrigerator for residential use that features a commercial-look glass door. Electronic controls offer accurate temperature adjustment, and the glass door offers a variety of interior lighting options, ranging from a soft glow (door shut) to full illumination (door open). 800/532-7820. Sub-Zero, Madison, Wis. **CIRCLE 287**

Barely there

Visplay Area features a range of sockets and components, including adjustable uprights, and merchandising accessories systems that can be easily mounted to wood or glass and configured to create displays for a wide variety of retail offerings. 330/343-6621. Marlite, Dover, Ohio. **CIRCLE 288**

Display modules

New options for the Zero System include an integral showcase module that allows for cost-effective display cases created within the Zero system. 401/724-4470. Zero, Lincoln, R.I. **CIRCLE 289**

Featherlight doors

Valcucine's balanced lift-up door is fitted with a counterweight for easy opening and features a light aluminum structure to which various materials, such as sail fabrics, titanium fiber fabrics, or aerogel fabrics can be applied. 212/253-5969. Valcucine, New York City. **CIRCLE 290**

Country kitchens

La Cornue's new line of cabinetry is designed to match the porcelain enamels and metal trims of its stove collection. The line is available in a range of colors and finishes, including copper, nickel, stainless steel, chrome, satin or polished brass, and features hand-selected materials, including steel plate and walnut and oak woods. 800/892-4040. Purcell Murray, Brisbane, Calif. **CIRCLE 291**

Smartly designed

The Smart Sympodium IC-150 and IM-150 interactive lectern integration modules (above) are ideal for conference centers, auditoriums, and lecture halls. The Smart Camfire DCi whiteboard camera captures high-resolution images of a dry-erase whiteboard. 888/42-SMART. Smart Technologies, Calgary, Canada. **CIRCLE 292**

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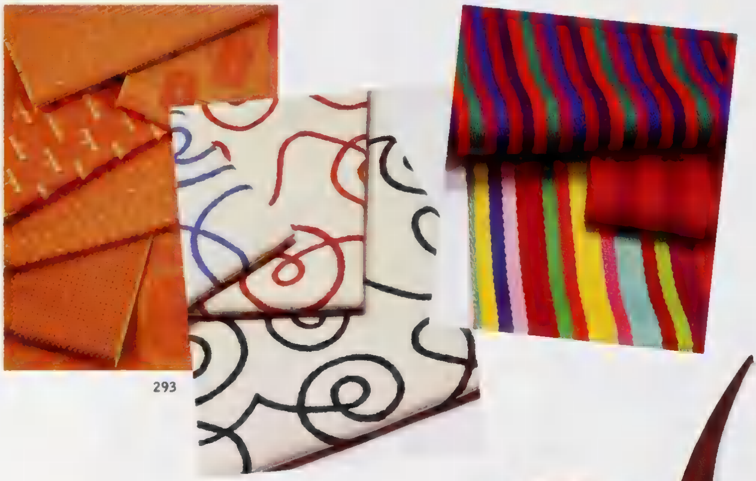
Furnishings

Fabrics/fabric treatments • Window treatments • Restaurant/outdoor/office/residential furniture • Multiple seating • Fixed audience seating

> Colorbox is a clever sorting idea. It makes sense of color by putting it into a logical format that is easy to use. —KAREN D. SINGH, IIDA

Textile abstractions

Maharam has expanded its *Textiles of the 20th Century Series* with the introduction of the Names (center) and three stripe patterns (right), all originally designed by Alexander Girard. A third textile offering from Maharam is Content (left), an environmentally responsible fabric with materials and manufacturing processes that reduce content toxicity, emissions, and resource consumption. All three textiles are for seating, walls, and window coverings and are available in a variety of colors. 800/645-3943. Maharam, New York City. **CIRCLE 293**



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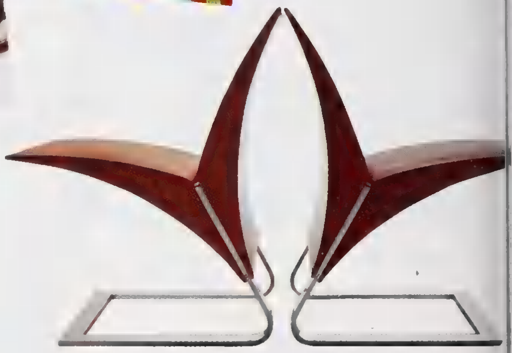
Formal seating

Poltrona Frau's strikingly different seating encompasses the curves of Ravello (far right) and the rectilinear forms of Talus (bottom right). Ravello was inspired by the flower of the same name and designed by Ricardo Antonio for an auditorium by Brazilian architect Oscar Niemeyer. Talus, the tamer of the two, comes in three versions—two love seats and an armchair. It is composed of aluminum legs and leather fabric; each version has small dimensions and compact seats. 212/777-7592. Poltrona Frau, New York City. **CIRCLE 294**



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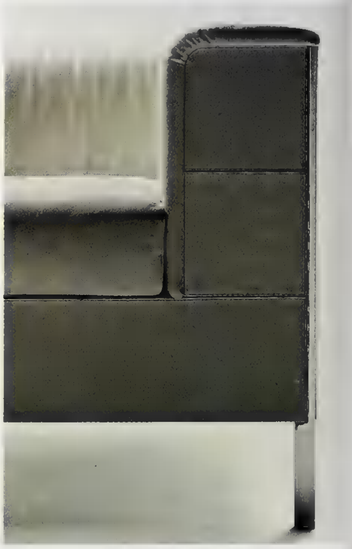
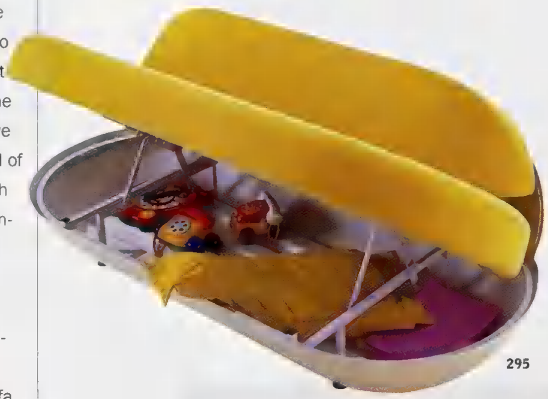


Sofa storage

Bonaldo offers an array of creative furnishings with multiple functions and eccentric forms. The Giubbe Rosse sofa (above), designed by Denis Santachiara, is a hollow shell that hinges to double its function as seating with storage. It is offered with an elasticized fabric cover in a variety of colors that can create privacy in an instant. Other highlights include the Bonaldo Miami table (below), which doubles the table's surface area in planes of red, black, or white. 415/925-2701. Leif Petersen, Inc. International Furniture, Larkspur, Calif. **CIRCLE 295**



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Flame-fearing fabric

Designtex's Lola flame-retardant fabric (left) complies with all industrial flame codes worldwide. It is made with non-toxic dyes and can be used as upholstery and as a wall finishing. Lola's pattern is inspired by the bold color of African Fante flags and is available in six colorways. Also from Designtex is Colorbox (below), a handy tool kit of color fabric samples that mimics a painter's color samples. 212/886-8140. Designtex, New York City. **CIRCLE 296**

Beam-balanced bench

Floatingframe is a beam-mounted seat designed for airports and other public spaces. The beam, leg, and seat frame are made of polished aluminum, and the seats attach to the beam at three points. 800/390-3909. Alias USA, Huntington Station, N.Y. **CIRCLE 297**

Sweeping shell shape

The Lipse chair features a plywood shell that is accentuated by the grain direction of different woods as they sweep along the shells and meet the aluminum connector. 336/889-2009. Davis Furniture Industries, High Point, N.C. **CIRCLE 298**

Cracker-thin seats

Alma's frame is in bright brushed aluminum, while the seat and backrest can be upholstered in a variety of materials, such as leather or plastic. The aluminum legs can be varnished to match the seat and backrest. 800/872-1697. B&B Italia, New York City. **CIRCLE 299**

Street smart

Street's frame is made from a polished, anodized aluminum tube, and the chair is ergonomic, stackable, and recyclable. The aluminum surfaces of the seat and back lie on injected polymer supports. 34 93 775 5651. Amat-3 International, Barcelona, Spain. **CIRCLE 300**

Montis moment

The Ypsilon table (above) has a top that is folded over with a filling in a different color, and it comes in three lengths. The Malou (bottom) is a new formula for large upholstered sofas that comes in four lengths: 5 seater, 4 seater, 3 seater, and 1½ seater. 888/8-MONTIS. Montis America, Carrboro, N.C. **CIRCLE 301**

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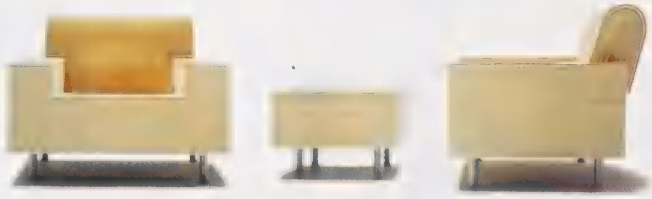
Furnishings

Fabrics/fabric treatments • Window treatments • Restaurant/outdoor/office/residential furniture • Multiple seating • Fixed audience seating



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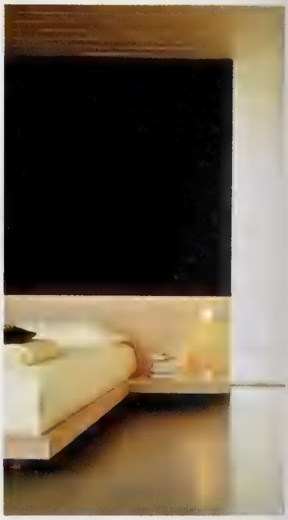

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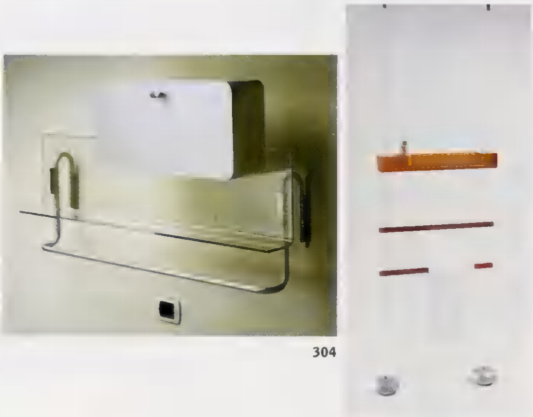

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Felt better

The Felt chair consists of an internal steel structure, felt infilling, and leather upholstery. The chair is constructed entirely of all natural materials, with naturally dyed leather. An ottoman is also available. 800/724-5665. Keilhauer, Toronto. **CIRCLE 302**

Peaceful dreams

The Ando bed, designed by Italian architect Paolo Piva for Poliform, delivers Zen-like simplicity through a simple frame headboard for the floating bed and attached end tables. The complete bedroom set is available in bleached oak or wenge, as well as the entire Poliform lacquer palette. 888/POLIFORM. Poliform USA, West Hollywood, Calif. **CIRCLE 303**

Bathing beauties

Dornbracht continues its Interiors Collection this year with a Rodolfo Dordoni–designed wall-shelf system. Light Drop, designed by Jean-Marie Massaud, is a multitiered towel rail with a mirror. 800/774-1181. Dornbracht USA, Duluth, Ga. **CIRCLE 304**

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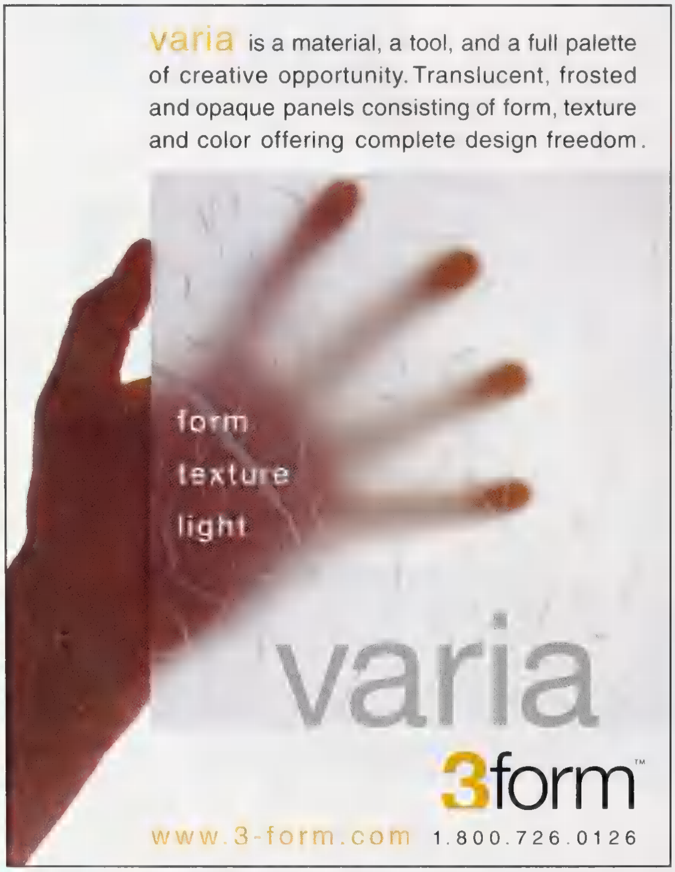

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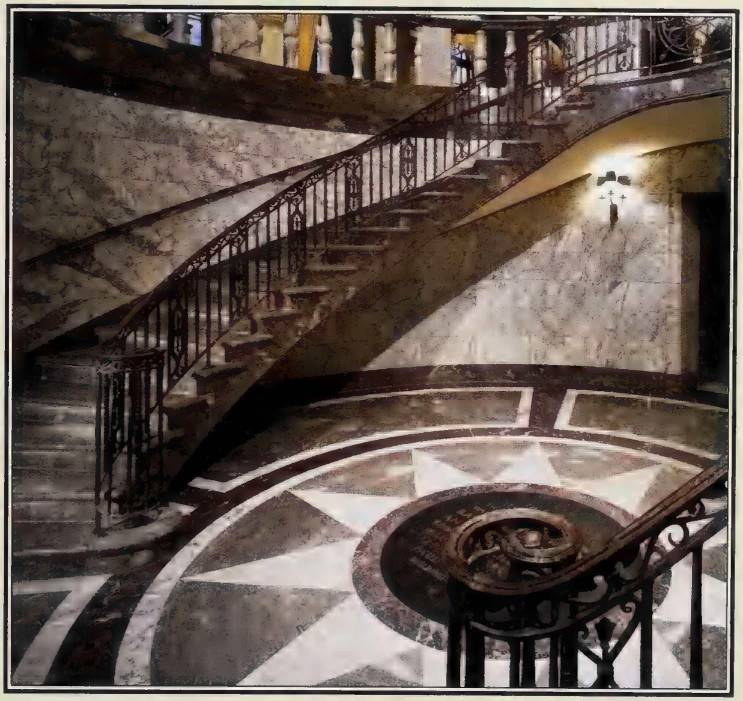

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Call a cab

CabForms Series 3000 is a complete elevator interior package, delivered prefabricated and ready to install, that features an interlocking grid system. 800/451-0410. Forms+Surfaces, Carpinteria, Calif. **CIRCLE 305**

Wall of light

The ChromaTransfusion system enables designers to create walls of pure, colored light that can be programmed to change slowly from one color to the next. The process involves the bonding of a proprietary interlayer material between two layers of safety glass. 800/275-7272. Cesar Color, Phoenix. **CIRCLE 306**

Save space, oil, and energy

The KONE ECO3000 escalator offers a smaller footprint, a wide selection of finishes, and the 96 percent efficient KONE ECO3000 Drive System. A compact, chainless drive eliminates the need of standard escalators to lubricate the drive chain, and the optional KONE EcoStart conserves energy by adjusting voltage and current up to 120 times per second in response to escalator workload. 800/956-KONE. KONE, Moline, Ill. **CIRCLE 307**

California skies

San Francisco International Airport has installed a 20-kilowatt array of building-integrated PV roofing panels to provide a portion of the power needed at one of the airport's support buildings. The system uses "peel and stick" Uni-Solar PV laminates bonded to metal roofing pans and installed in modular units. 800/843-3892. Bekaert ECD Solar Systems, Troy, Mich. **CIRCLE 308**

Mobile facilities

Kohler Mobile Plumbing Systems plans to offer luxurious bathroom suites, commercial bathroom/showering trailers, industrial bathroom/showering trailers, and decontamination units. 800/4-KOHLER. Kohler, Kohler, Wis. **CIRCLE 309**

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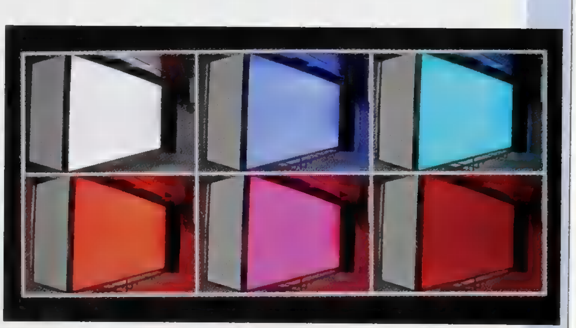

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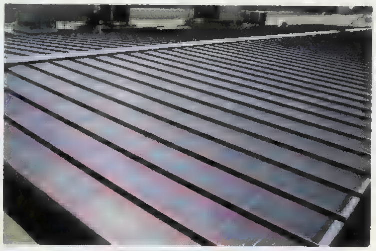

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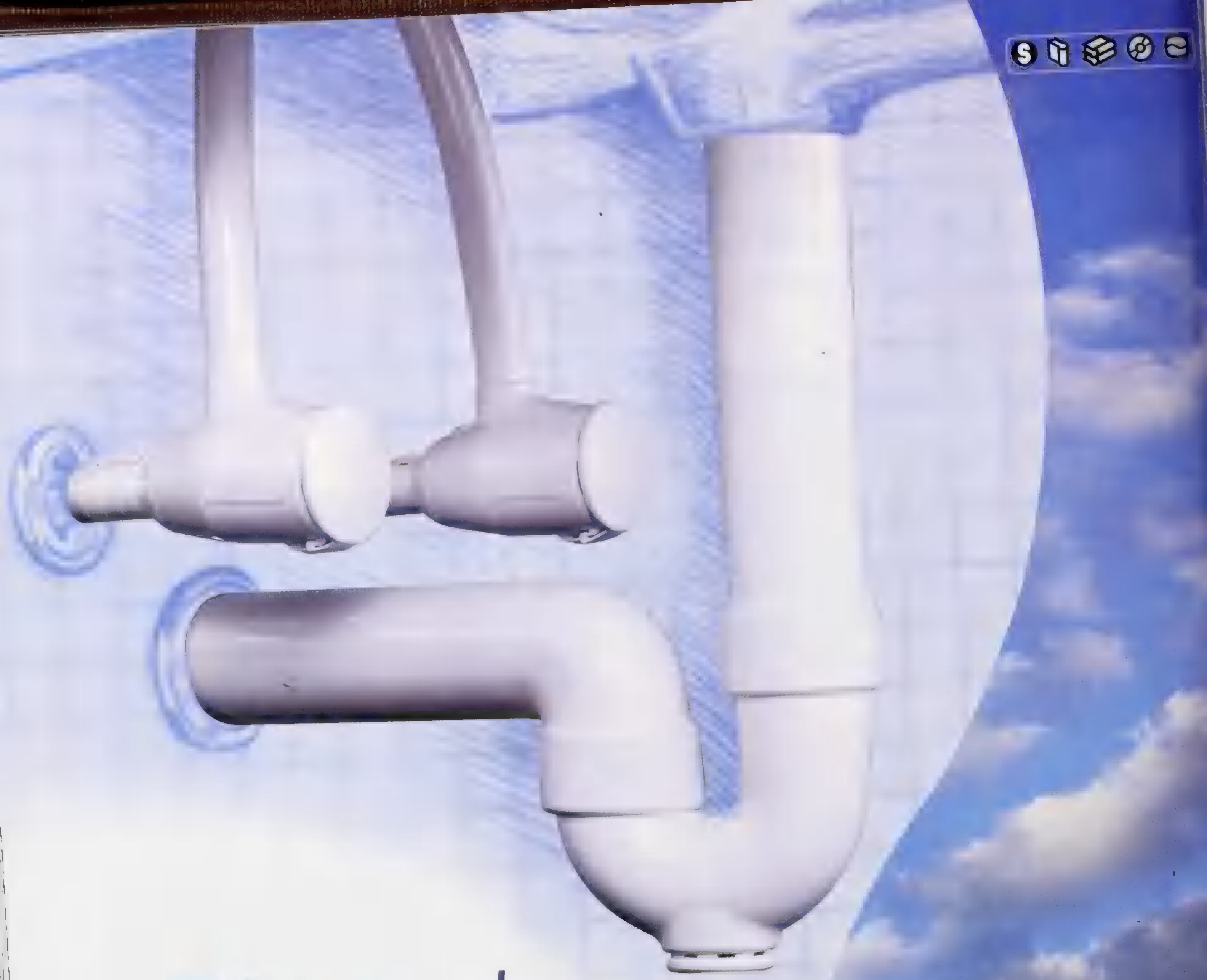

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Mechanical

Plumbing fixtures & equipment • Toilets • Air-cleaning devices

> The McDry urinal is one of the best items I have seen this year. It's sculptural, well thought out, and makes sense on every level. —KAREN D. SINGH, IIDA

Bathing beauties

Pluvia is a wall-hung shower system designed by Italian architect Matteo Thun for Raspel. Its sleek, brushed-stainless-steel pole spirals from the wall to support an oversize central showerhead. The Carezza Lake tub by Peter Büchele has an ergonomic interior within a rectilinear profile. Both systems are ideal for indoor or outdoor use. 800/351-0038. Hastings Tile & Il Bagno Collection, Freeport, N.Y. CIRCLE 310

Form zero

Ranging in shape from rectangular and square to round and oval, the Zero System lavatories by Catalano can be wall, counter, or surface mounted. Their monolithic form is available with options for integral towel bars, work surfaces, console legs, and in-sink draining racks. 800/351-0038. Hastings Tile & Il Bagno Collection, Freeport, N.Y. CIRCLE 311

Lavatory, neo-style

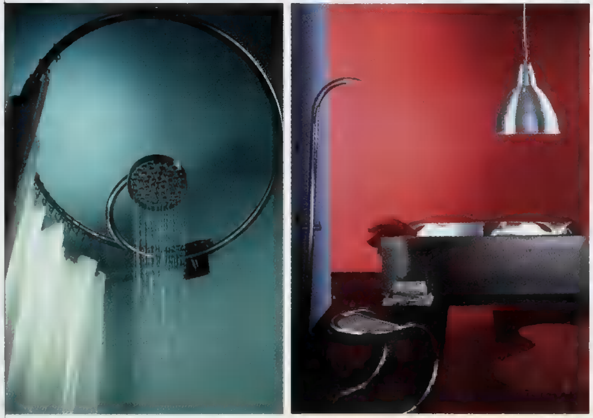
Neo-Metro's tub, basin, and toilet pieces are all manufactured from stainless steel, for its institutional and Minimalist character. The double-wall tub has a seamless, rounded tank bottom. The basin and toilets are designed to expose their mechanical structure. 800/591-9050. Neo-Metro Collection, City of Industry, Calif. CIRCLE 312

A sinking feeling

The new Oceanview floor sink makes tasks such as washing the dog or rinsing muddy car mats more convenient. While designed to be installed flush with the floor, it can also be built into many standard cabinets. 920/457-4441. Kohler, Kohler, Wis. CIRCLE 313

All-in-one

The Blanco Module kitchen sink sports an integrated design, flush front edge, and raised backsplash in a one-piece, stainless-steel countertop. 800/457-5782. Blanco America, Cinnaminson, N.J. CIRCLE 314



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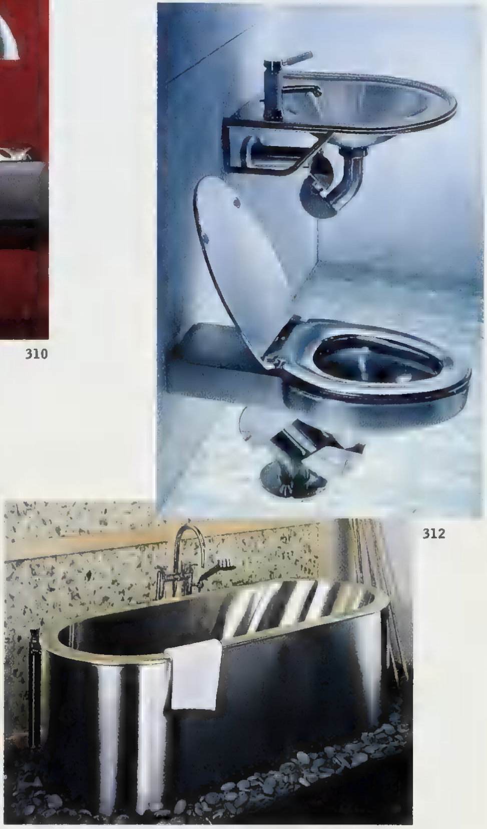

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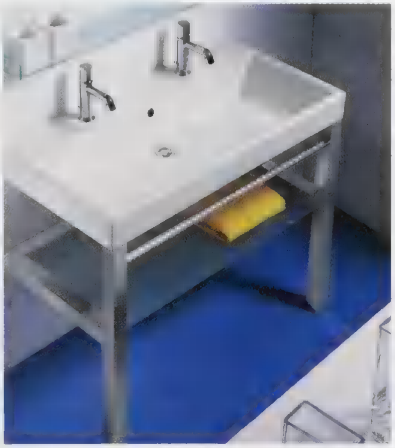

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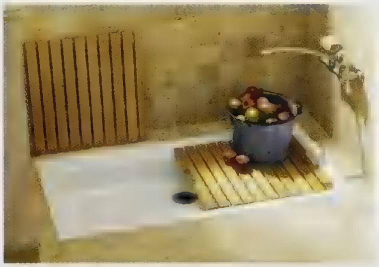

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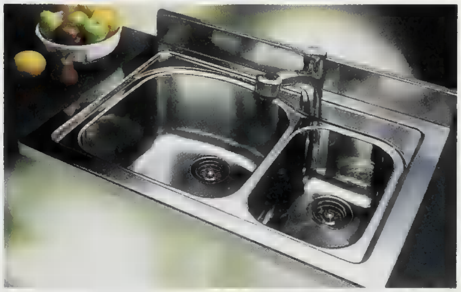

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Mechanical

Plumbing fixtures & equipment • Toilets • Air-cleaning devices

Standing pretty

The McDry flushless urinal features a sealing liquid that has a specific gravity lighter than urine that keeps odors away. McDry's droplet shape prevents dirt from building up, and it is completely contact-free for the user. Also from Duravit is the 41" wash basin by Philippe Starck, with an exaggerated countertop. 888/DURAVIT. Duravit USA, Duluth, Ga.

CIRCLE 315

Indoor air filtration

To combat indoor air pollution, GuardianPlus Air Systems offers a compact and retrofittable filtration system that cleans indoor air, making it virtually free of allergen materials. 800/637-1453. GuardianPlus Air Systems, Hartford, Wis.

CIRCLE 316

Industrial faucet

The Tara Classic Profi faucet, with gooseneck and pendulum swing, is reduced in size for residential use, with a choice of polished chrome or platinum matte finishes. 800/774-1181. Dornbracht, Duluth, Ga. **CIRCLE 317**

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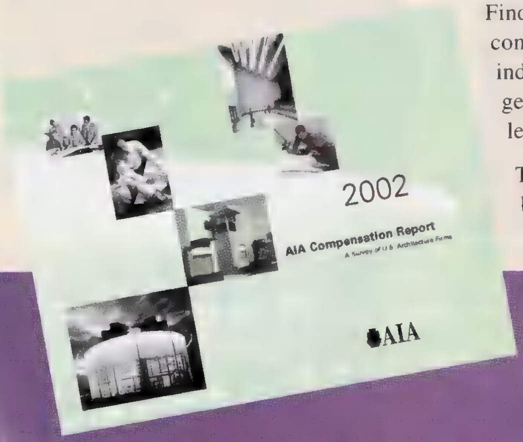

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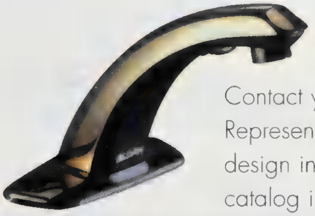

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Electrical

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> **Stria uses a standard low-voltage lamp system in a well-designed extrusion that allows a clean integration of the fixture into an architectural product.** —*RICHARD RENFRO, IES, IALD, LC*

Light energy

Syltoplus (center) conceals miniature T5 fluorescent lamps inside a 1¼" diameter extruded aluminum cylinder. The cylinder twists to adjust the light source up to 180 degrees. The candlelike design of Free (left) integrates easily into many styles, and the circular design of Centra (far right) features a dual optical system centered around an aluminum reflecting disk. 720/963-8055. Energie, Lakewood, Colo. **CIRCLE 318**

Snappy extrusions

The Stria lighting module is composed of two nesting aluminum extrusions. The outer extrusion is designed to form a self-trimming offset lighting cove and will readily accept up to ⅝" thick gypsum wallboard. The inner extrusion encloses a Lucifer Series 2000 Light Strip and is covered by a specially extruded polycarbonate diffusion lens. 210/227-7329. Lucifer Lighting, San Antonio. **CIRCLE 319**

LEDS and luminaires

LEDOS (above right) incorporates miniscule, low-voltage LED technology to produce highly saturated color in red, green, yellow, blue, or white. The Ethos indirect luminaire (below) features a curved end cap and an optional side-lit perforation detail that adds a subtle direct component. New versions of the luminaire include the single-lamp T5 HO; three lamp profiles; or a larger version for T8 lamps. 800/932-0633. Zumtobel Staff Lighting, Highland, N.Y. **CIRCLE 320**

Dreaming in color

Color Stream looks like a fluorescent tube, but it changes color, generates patterns, and moves the patterns along the tube. The effect is created by a linear array of LEDs housed in a weatherproof tube suitable for interior and exterior applications. When multiple tubes are linked together, preprogrammed or custom effects cascade down the daisy-chained units. 512/834-2624. Bright Lighting, Austin. **CIRCLE 321**

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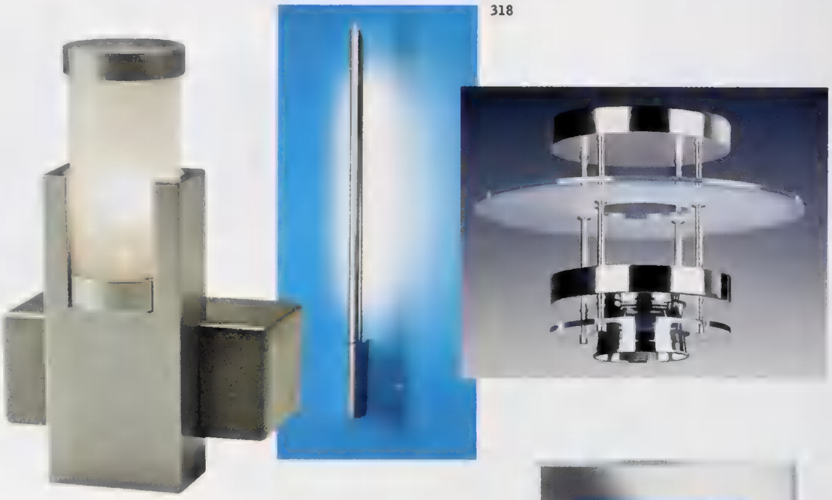

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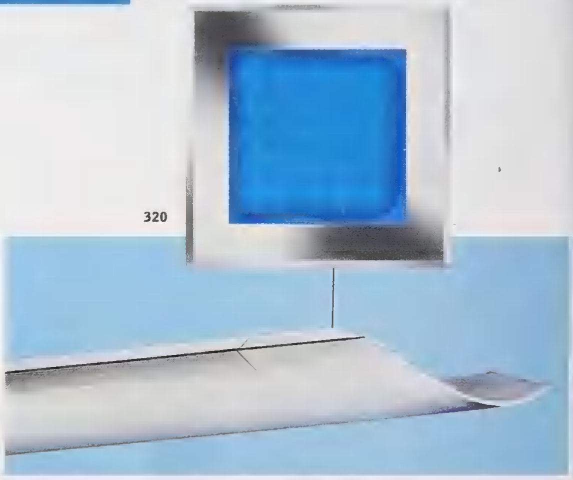

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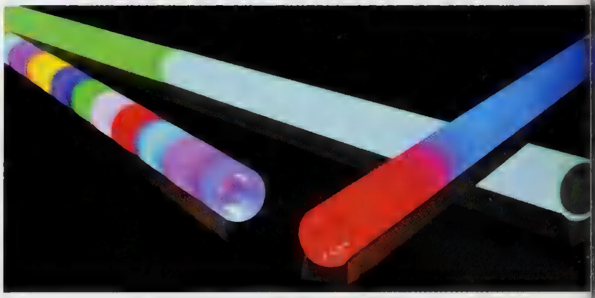

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For every angle

HessAmerica's LED illuminated Tile series (left) enables designers to integrate lighted guidance markers into exterior and interior pathways and walls. Four sizes and colors are available, with a drive-over capacity of 1.5 tons. The Faro high-performance outdoor indirect luminaire (below center) illuminates both the vertical and horizontal planes of any outdoor landscape or area. The SEDI luminaire (above center) features a stepped, cast aluminum faceplate that is available in square or rectangular configurations. 704/471-2211. HessAmerica, Shelby, N.C. **CIRCLE 322**

Classic interpretation

With the new floor lamp, Super Archimoon (bottom left), Philippe Starck reinterprets the bend-and-flex form of the classic architect's lamp and adds a domestic twist. 800/989-3567. Flos USA, Huntington Station, N.Y. **CIRCLE 323**

Wireless technology

RadioLink, Vantage's new wireless RF system, provides a completely integrated automation system for residential and commercial use. A single RadioLink system handles up to 15 controllers and provides error-free transmissions as far as 100 feet. With RadioLink, small transceivers are built into each component and control not only lights but audio/video, draperies, blinds, security, heating, cooling, and more. 800/555-9891. Vantage Controls, Orem, Utah. **CIRCLE 324**

Boxy bollards

Bega's 8535 series (top right) features optical systems with concealed light sources for downlighting without glare or efficient asymmetrical floodlighting of walls, both contained in matching trapezoidal bollard housings. The bollards feature ceramic metal halide G12 T6 lamps, have a rugged construction, and are suitable for wet locations. 805/684-0533. Bega/US, Carpinteria, Calif. **CIRCLE 325**

Solar buddy

Thanks to a rechargeable solar battery, the wireless Solar Bud (designed by Ross Lovegrove) can stay on between 13 to 15 hours after at least five hours of full exposure to daylight. 212/989-6265. LucePlan, New York City. **CIRCLE 326**

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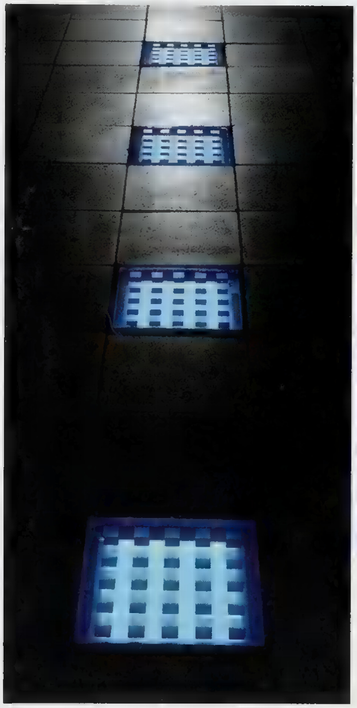

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2003

Company Profiles

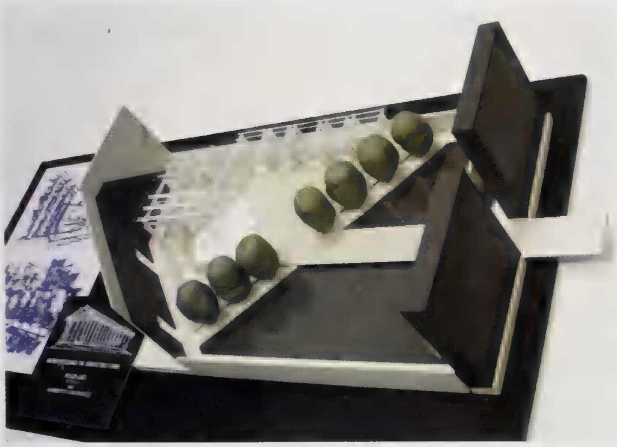
SPECIAL ADVERTISING SECTION

Products are integral to the realization of architectural design. On the following pages, architectural product and material manufacturers celebrate and share their products, plans and visions for 2003 with *Architectural Record* readers.

Academy of Art College

Art by Xiao Lin Li, Student.

Art by Xiao Lin Li, Student.



Art by Xiao Lin Li, Student.

The Academy of Art College was established in San Francisco by Richard S. Stephens, a creative director with Sunset magazine. In 1929, he decided to open a school to teach Advertising. Assisted by his wife, Clara, the new school was initiated in a rented room on Kearny Street. In a few years, a distinguished faculty of practicing art and design professionals was assembled and the school's philosophy was formulated: hire established professionals to teach future professionals. In 1933, the curriculum was expanded to include Fashion Illustration, and in 1936, a Fine Art Department was added.

In 1951, Richard A. Stephens took over the Presidency from his parents and continued to expand department majors. In 1966, the school was incorporated and granted authority to offer a Bachelor's Degree in Fine Art by the Bureau for Private Postsecondary and Vocational Education of the State of California. In 1977, the Master's program was inaugurated and approved by 1983.

In 1992, the granddaughter of the founder, Dr. Elisa Stephens, succeeded her father as President of the Academy of Art College. Today the college has over 6,500 students, making it the largest private school of art and design in the country. Students now have the opportunity to pursue AA, BFA, MFA and Certificate Programs on campus or online in 11 departments including Advertising, Architecture (MFA only), Computer Arts, Fashion, Fine Art, Graphic Design, Illustration, Industrial Design, Interior Architecture & Design, Motion Pictures & Television, and Photography.

The MFA Architecture program was recently added in 2001. Its curriculum provides the graduate candidate with an education which integrates design, theory, technology, and practice. The studio courses are the core of the curriculum and they use San Francisco and the greater Bay Area as a context for the exploration of contemporary architectural issues. Within an art school, architecture students are exposed to a wealth of design ideas related to architecture, weaving art with technology.

The graduate architecture candidate is challenged to explore and respond to a range of formal, cultural, and technological architectural issues including: composition, program, user groups, site, history, structure, construction and materials, and environmental controls. Under faculty supervision, the MFA Architecture curriculum supports each graduate candidate in proposing, researching, designing, and completing a personal Final Project which encompasses the comprehensive nature of building design. Final projects demonstrate both creativity and vision as well as a mastery of professional and technical skills. Completed Final Projects are exhibited professionally upon the approval of the Review Committee.

To schedule a visit or get information on the Academy of Art College and its Architecture MFA program, please call 1-800-544-ARTS (toll free within U.S.), +1 (415) 274-2200 (outside U.S.), or visit www.academyart.edu.

Academy of Art College
(800) 544-ARTS (U.S.)
(415) 274-2200 (outside U.S.)
www.academyart.edu

AcademyOfArtCollege

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Openaire Inc.

Retractable Roof Enclosures and Operable Skylights...Open Up to the Possibilities!

New and exciting design opportunities are now possible by combining your unique design ideas and OpenAire's success with operable skylights and retractable roof enclosures. Since its inception, OpenAire has been designing, manufacturing and selling the finest retractable roof enclosures and operable skylights available on the market. Initially most projects focused on pool enclosures and sport facilities, however the project scope has since grown and now includes custom design installations such as atriums, patios, restaurants, wellness centers, natatoriums, waterparks, zoos, observatories and domes as well as other unique design applications. With numerous corporate and residential contracts, OpenAire is rapidly expanding internationally with projects that include North America, England, Europe and the Middle East.

OpenAire's in-house Design department works with architects, engineers, builders and property owners to custom design the operable skylights and retractable roof enclosure for each specific application, in addition to preparing shop drawings. The structures are manufactured by OpenAire and only materials of the highest quality are used. Each project is installed on site by a trained and select crew.

DESIGN FEATURES

The OpenAire system features motorized roof panels that retract to open up to 50% of the roof area letting in natural light and fresh air thus providing "indoor-outdoor" versatility. There are rain sensors to close the roof automatically. Highlights of key design features are:

- an exclusive maintenance-free thermally broken aluminum framing system
- thermal breaks and vapor barriers reduce condensation caused by heat loss to the exterior
- operable skylights and retractable roof enclosures capable of spanning large distances up to 100 feet + (32 meter) and maintaining a deflection of L/180
- system availability in ridge and single slope design
- roof and sidewall glazing options that include 1 inch (approx. 25 mm) insulating glass, 1 inch (approx. 25 mm) quintuple wall polycarbonate
- for enhanced protection and aesthetics, OpenAire offers a rainbow selection of custom paints in PPG Duracron, Duranar or Acrynar

ADDITIONAL PRODUCT BENEFITS

- OpenAire enclosures increase the use of facilities by creating year-round atmosphere great for new or existing construction, and for commercial or residential properties
- custom design solutions
- proven performance in worldwide climates
- highly efficient and cost effective design
- "one-stop-shop" - comprehensive customer support, from design start to installation finish
- installed worldwide by trained, select crews
- OpenAire's extended warranties

For more information, contact:

OpenAire Inc.
6581 Kitimat Road
Unit 3 Mississauga, ON L5N 3T5
(905) 819-8535
Fax: (905) 819-0553
Int'l Toll Free: (800) 267-48777
Email: sales@openaire.com

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RHEINZINK America, Inc.

RHEINZINK

TÜV CERT
DIN EN ISO 9001
Zertifikat 09 100 4346

QUALITY ZINC
TÜV

ASSOCIATION FOR ENVIRONMENTALLY PROOFED BUILDING PRODUCTS

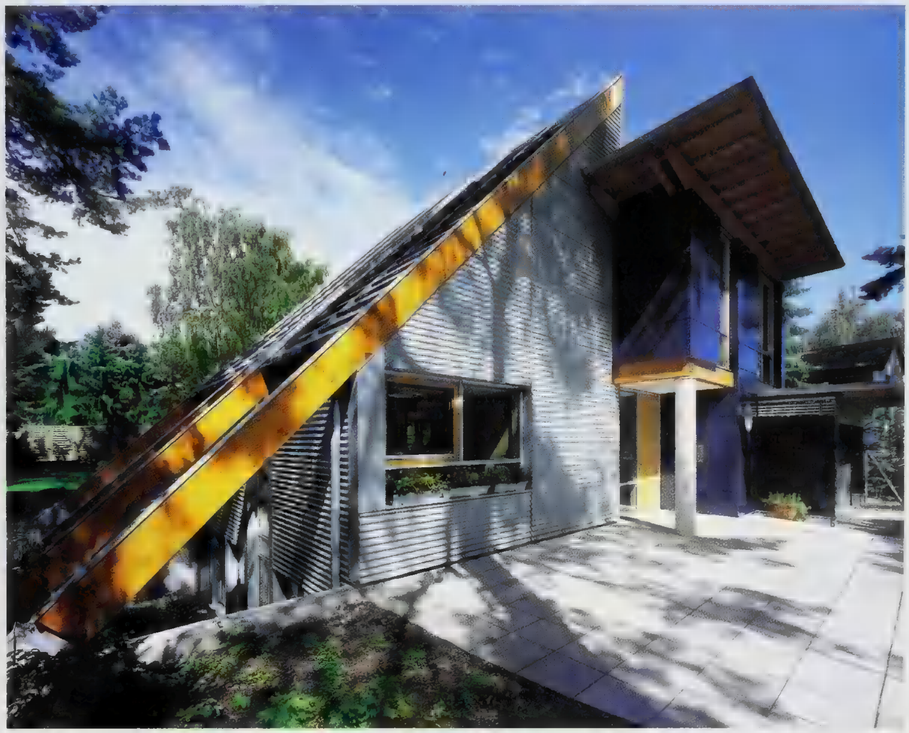
RHEINZINK America, Inc.
955 Massachusetts Ave, Suite 770
Cambridge, MA 02139
Phone : 617-871-6777, Fax: 617-871-6780
Email: info@rheinzink.com

RHEINZINK® is titanium zinc used for high qua-ity architectural cladding of roofs, facades and nteriors. This crafted metal, combining 99.995 % high-grade zinc with copper and titanium alloys, is environmentally friendly and 100% recyclable. Due to the wide range of possible variations in its detailing, the fine line design of the double standing seam complements raditional architecture with the same degree of self-assurance as modern designs. Convex and concave curves, conical assemblies and other applications can also be formed without difficulty.

Additionally, RHEINZINK's Technical Service provides support and assistance to architects and craftsmen alike, not only with tendering and shop drawings but also with specifications and mock-ups. With a large number of installers hroughout America and material stocked in several states, craftsmanship and order time are not an issue.

Whether in the classic or modern style, RHEINZINK®, provides an elegant contrast to all construction materials. With RHEINZINK®, archi-ectural elements such as dormers, chimney facings and towers will become special features. RHEINZINK® material thus represents a versatile component of harmonious architectural design.

RHEINZINK® is available in bright rolled and n preweathered formats. RHEINZINK® preweathered material has an attractive blue-gray color that offers the benefits and qualities of natural weathering without the wait, and unlike other materials without run-off staining. This imeless material has an 80 to 100 year lifespan on a roofing application and a 200-300 year ifespan on a wall cladding application, with he ability to self heal and will not fade over ime. If you are thinking of the future, you are hinking RHEINZINK®.



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ROHL

Country Bath faucet A1419XM adorns Shaws Original sink RO-1915.

Rohl's Allia 6307 fireclay sink complements an A3608 Country Kitchen faucet with side spray, LS650C soap dispenser and A1435 filtered water faucet.

ROHL
1559 Sunland
Costa Mesa, CA 92626
(800) 777-9762
Fax: (714) 557-8635
www.rohlhome.com

ROHL

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Distinctive Products for the Kitchen and Bath Create the Experience of Authentic Luxury

Celebrating its third decade as a leading provider of distinctive products for the kitchen and bath, ROHL continues to market desirable products that weave time-honored craftsmanship with state-of-the-art materials and manufacturing. While capturing the subtle essence of old-world charm, ROHL's entire product line is created to deliver enhanced quality, beauty and longevity with minimal maintenance and care. Each ROHL piece offers elegance in design while providing maximum functionality. Authentic finishes, genuine to the touch, further complement, enhance or extend the desired look and appeal to the designer, architect and homeowner. These coordinated collections offer a unique variety of premiere design solutions to create a ROHL home from complete suites of fixtures throughout.

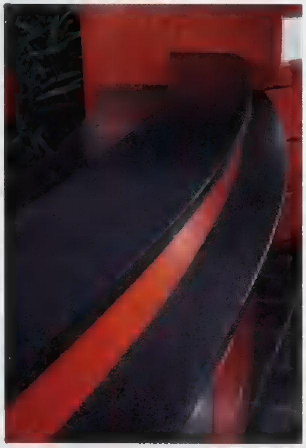
A growth company built upon the foundation of experience, family pride and valued customer relationships, creativity, integrity and reason continue as ROHL's driving forces. ROHL's exclusive product line is made available only through fine independent kitchen and bath showrooms across the country. The company is based in Costa Mesa, California where it maintains warehousing, distribution and a training center. Regional sales offices are located in San Francisco and the New York metro area.

For the kitchen, ROHL offers a visual culinary delight — from the artisan métier of authentic Shaws Original farmhouse fireclay sinks originating from Lancashire, England — to the richly endowed Allia sinks, generous in size while reflecting a reverence for the design and hard-working style. Completing the beauty and function of these sinks to create truly personalized water appliances, ROHL offers its Perrin & Rowe®, Country Kitchen and Pull Out faucet lines, along with cold or filtered water faucets, Super Soaper dispensers and a thorough selection of helpful accessories.

ROHL's collections for the bath and shower embody a marriage of state-of-the-art manufacturing technology with the authentic regional design influences of their English, French and Italian origins. ROHL is pleased to present the Perrin & Rowe® collection of premier quality Edwardian-styled shower and bath fixtures and faucetry. From the hills above Lago d'Orta, Italy comes ROHL's Country Bath and Cisal bathroom and shower collections featuring period-designed faucets along with thermostatic and pressure balanced valves with coordinating showerheads, handsprays, bodysprays, rainbars and accessories. ROHL's broadening bathroom fixture collection features pedestal, vanity bath and powder room basins from the historic ceramic centers of Limoges and Stoke-on-Trent along with the groundbreaking above counter bowl creations of Los Angeles artist Jon Grauman. The Rohl Modern Bath Collection is the latest addition to the already comprehensive offering.

ROHL is a leader in providing distinctive products for the kitchen and bath — creating the experience of authentic luxury for America's finest homes, resorts and hotels. Contact ROHL at 1559 Sunland, Costa Mesa, CA 92626, phone (800) 777-9762, fax (714) 557-8635 or visit www.rohlhome.com.

Staron® by Samsung



Samsung Chemical USA
14251 E. Firestone Blvd.
La Mirada, CA 90638
(562) 926-5520
Fax: (562) 926-9930

SAMSUNG staron

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Staron® by Samsung.
Innovative Countertop Solutions.

Looking for a high-quality, design-oriented countertop material? Try Staron.

As an emerging leader in the solid surface industry, Samsung Staron offers architects and design professionals a large color selection, a consistent, smooth appearance and endless design possibilities.

DESIGN POSSIBILITIES

Unlike other surfaces, Staron is easily fabricated – allowing architects to create unique countertop and tabletop designs. Because Staron is an acrylic material, attractive inlays, insets and edge treatments can be incorporated into the finished product.

Staron's design versatility caters to both the residential and commercial markets. Kitchen countertops, backsplashes, bathroom vanities, sinks, and shower and tub surrounds are common residential uses. Staron has a variety of commercial applications as well, including restaurant food preparation areas and tabletops, retail displays, office desktops and partitions, and other high-traffic areas.

CONSISTENT APPEARANCE

Another added benefit of Staron is its smooth, even appearance. With Staron, seams and ridges are virtually undetectable even for large countertop applications. Designers can create intricate curves and shapes while maintaining an attractive, continuous appearance.

COLORFUL

Staron is available in more than 50 popular colors. The large color selection gives designers the flexibility to match with existing décor styles or integrate with a new design. The colors are grouped into four series and include a variety of textures and patterns.

- **Staron Pebble Series**
  As the name implies, the Pebble series has a stone-like appearance similar to granite, but with more color variation.
- **Staron Aspen Series**
  The Aspen series has a more refined look than its pebble counterpart, offering an attractive quartz-like appearance.
- **Staron Sanded Series**
  Colors in the Sanded series have a softer appearance, and come in both warm and cool tones.
- **Staron Solid Series**
  The classic Solid colors are intended to blend with any design or style.

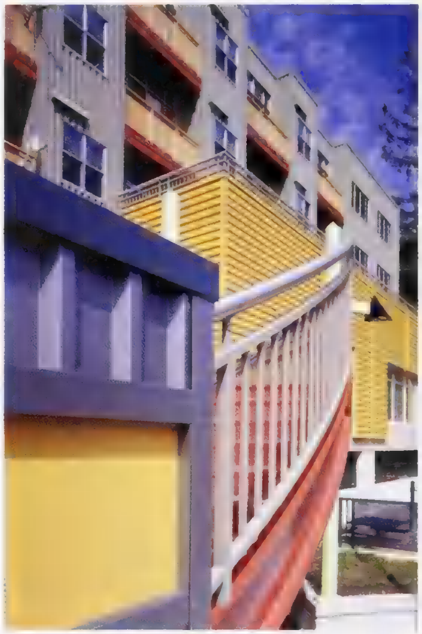
ADDITIONAL BENEFITS

The benefits don't just end here. Staron is durable, stain-resistant, hygienic, and easy to clean and maintain – attributes important to clients and consumers. It's practical for everyday wear and tear, more affordable than other surfaces such as granite and elegant, retaining its beauty for years to come.

Staron is manufactured through quality control systems certified by ISO 9002 (International Quality Assurance System) and by ISO 14001 (International Environmental Management System).

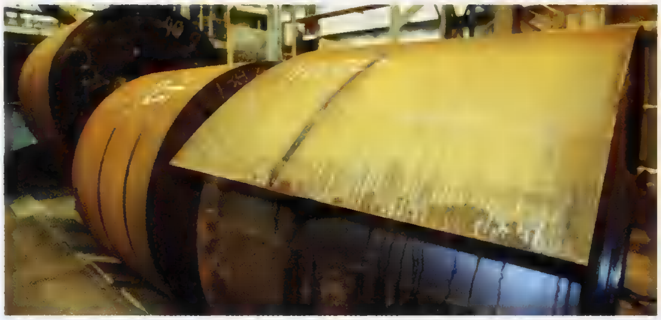
For more information about Staron or to locate a distributor in your area, visit www.GetStaron.com/design3, call 1-800-795-7177 or contact Ricky Choe in Staron's sales and distribution at rickyc@sai.samsung.com or 1-562-926-5520.

Steelscape, Inc.



Safron Building, an impressive end-use of our painted steel.

Coil field crane, crane operator carefully placing coated coils that are inline for packaging and shipping.



Hotband, raw steel sheet waiting at the Pickle Line entry for cleaning and trimming, and then on to the Cold Roll Mill.

Steelscape, Inc. produces metallic-coated and painted steel coils for the construction industry in North America. But customers get more than just high-quality products from Steelscape – they get a partner who works for their success. Steelscape is committed to providing reliable delivery performance and responsive customer service as well as superior quality products.

At the same time, Steelscape strives to be a great place to work and a valued member of the communities in which it operates. That means the company must achieve high standards in environmental and employee safety. Steelscape is dedicated to being a responsible employer and a good neighbor.

Steelscape bases its business philosophy on listening to customers and providing the best service in the industry. Aside from superior product quality and competitive pricing, customers appreciate Steelscape's willingness to "go the extra mile" to satisfy their needs. Building relationships and working with customers to add value to their business is a priority throughout the company.

Steelscape's 95 percent success rate with on-time delivery is not typical to the steel industry. Its facilities are strategically located near major truck and rail routes to ensure that it can serve all destinations promptly and efficiently.

ZINCALUME® steel, coated with Steelscape's formula of zinc and aluminum, offers outstanding corrosion resistance for a demanding exterior lifetime. It can be readily shaped, rollformed or drawn. ZINCALUME's spangled surface is consistent top-to-bottom, side-to-side. In addition, a clear odorless resin coating can be applied in-line to produce ZINCALUME Plus steel. The coating provides a beautiful satin-smooth finish that resists scuff marks, eliminates the need for lubricants during rollforming and allows easy painting without priming.

Steelscape's TruZinc® galvanized steel has set new industry standards: it's cost effective, easy to work with and can be rigorously applied to a variety of applications. TruZinc steel is resistant to corrosion, particularly on cut edges, and is suitable for a wide range of forming and welding processes. Steelscape's cold mill ensures consistent shape and surface, which contributes to TruZinc's uniform minimum spangle. Also, the same clear, odorless resin coating as ZINCALUME Plus, can be applied in-line, producing TruZinc Plus steel.

Steelscape has the unique ability to combine high-quality metallic-coated steel with high-quality paint systems. They can provide a painted finish to suit most environmental application or color requirements. Dual paint rollers and pay-off reels allow for continuous operations and inspections, while embossing and slitting capabilities finish off the job. Steelscape's paint lines run some of the most popular and proven paint systems in the industry for every project from gazebo roofs to football stadiums. Painted steel gives you the look you want, and is ideally suited to even the most demanding climates.

Quality steel. Quality Paint. Technical expertise. Superior service. That's what customers get from Steelscape. And they will get it all in one place, so they know the finished product will meet the highest standards for durability, formability and appearance. Every time.

Steelscape, Inc.
(888) 285-7717
www.steelscape.com

steelscape

Kalama
222 West Kalama River Road
Kalama, WA 98625-9420 USA
(360) 673-8200 Fax: (360) 673-8250

Rancho Cucamonga
11200 Arrow Route
Rancho Cucamonga, CA 91730-4805 USA
(909) 987-4711 Fax: (909) 989-4470

Richmond
2995 Atlas Rd.
Richmond, CA 94806 USA
(510) 262-4888 Fax: (510) 223-3038

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CORPORATE PROFILE: THE VISTAWALL GROUP

In today's fast-paced construction world, with its demand for on-time delivery, quality products, outstanding service and one-source responsibility, The Vistawall Group has emerged as a leading supplier of architectural products. Distinguished by its ability to offer a complete exterior package, including curtain walls, entrances, storefronts, windows, skylights and translucent systems, The Vistawall Group has supplied numerous prestigious construction projects around the globe, including Tennessee's Opryland Hotel and the Kuwait Scientific Center.

South Dining Hall
Notre Dame University
Ellerbe Becket

Mall of Louisiana
Crawford
McWilliams
Hatcher
Architects Inc

Pacific Bell Ballpark
Hellmuth, Obata and
Kassabaum P.C. Inc

Navy Pier/Shakespeare Theater
VOA

Founded in 1962 as Texas Aluminum, the company was renamed Howmet Architectural Products after a 1973 acquisition. In 1984, Howmet was acquired by Butler Manufacturing Company, the world's leading producer of nonresidential building systems, and the name Vistawall Architectural Products was born. Since joining forces with Butler, the company's work force has swelled from 350 employees to 1,500 employees.

Today, thanks to strategic acquisitions, The Vistawall Group and its clients profit from the product and manufacturing expertise of four distinguished companies. Vistawall Architectural Products provides storefronts, entrances, window walls and high-rise curtain wall systems. Naturalite Skylight Systems offers an extensive line of skylight designs, as well as heat and smoke vents. Skywall Translucent Systems furnishes custom-engineered translucent systems. Moduline Window Systems, provides high performance architectural grade windows. Combined these companies provide a package of building-envelop products from one company.

Vistawall takes a hands-on approach to quality control. Through every phase of production, this company maintains complete control in order to insure that only the best products are shipped to each job site. At the company's one-half-million-square-foot production, fabrication and distribution facility located in Terrell, Texas, Vistawall has the capability to direct the entire material flow for a project. Engineering, testing, extrusion, anodizing, painting and fabrication are all accomplished at this state-of-the-art facility.

Ongoing research and development keep Vistawall on top of a highly competitive and technically challenging market. In-house testing capabilities allow experimentation with new concepts and materials. An aggressive approach to product development finds The Vistawall Group constantly upgrading, improving and introducing new products into the marketplace. Products such as the world's first pressure wall and the Advanced Translucent Skylight™ system (ATS™) have made Vistawall an innovation leader.

The Vistawall Group
P.O. Box 629 • 803 Airport Road
Terrell, Texas 75160
972/551-6100 • Fax 972/551-6264
www.vistawall.com

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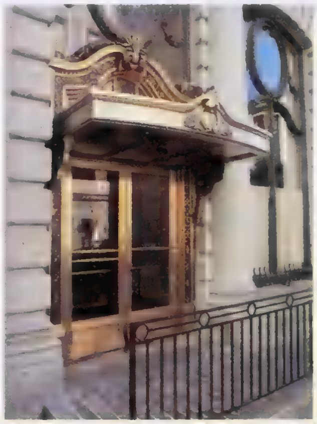
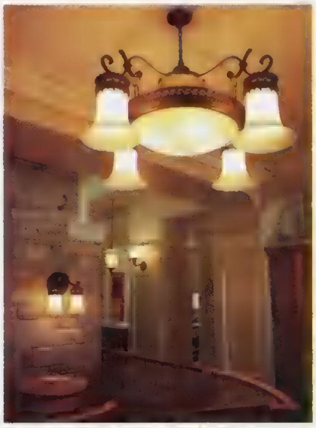
Historical Arts & Casting, Inc.



Bronze Entrance Canopy Union Trust Bank



Bronze & Blown Glass Light Fixture

Historical Arts & Casting, Inc. has been a pioneer and leading force restoring and replicating architectural cast metal ornament since its origination. They were founded in the early 1970's when a restoration Architect, desperate to rediscover the technology required to save some of America's finest architectural cast iron treasures, coordinated a small team of artisans and skilled tradesmen to accomplish this work.

Today, they occupy a modern manufacturing facility on ten acres in West Jordan, Utah. Historical Arts and Casting is creating the wonderful ornamental metalwork that was being produced in the late 19th and early 20th centuries. Their work includes: fabulous bronze windows and doors, elaborate storefronts, facades and canopies, highly detailed cast lighting, magnificent railing systems, elegant fountains and much more. Their staff has grown to accommodate all of the trades required to accomplish this work under one roof, including skilled designers, patternmakers, sculptors, foundry men, blacksmiths, fabricators, machinists, finishers, installers and a complement of wonderful support staff to insure prompt reliable service.

Historical Arts & Casting is working in partnership with some of this country's most respected restoration and contemporary architects. They are producing metalwork for the most notable public buildings, parks, theaters, religious buildings, commercial developments and private residences in America. Their passion is in the details.

With years of experience, the staff at Historical Arts is ready to assist you. They can provide a variety of services from product design to installation and information on materials, manufacturing technology, and finishes. Historical Arts has re-published several reference publications and have a wonderful binder and web site representing their products. Their mission to design, manufacture, restore or replicate and install metalwork of the finest quality can be realized for your next project. Contact them for more information by telephone, regular mail or e-mail. They may also be seen in the Sweet's Catalog, Arcat, and First Source directories and regularly advertise in Architectural Record, Traditional Building and Period Home Magazines.

Historical Arts & Casting, Inc.
5580 West Bagley Park Road
West Jordan, UT 84088
Toll Free: (800) 225-1414
(801) 280-2400 Fax: (801) 280-2493
E-mail: info@historicalarts.com
www.historicalarts.com

HISTORICAL ARTS AND CASTING ®

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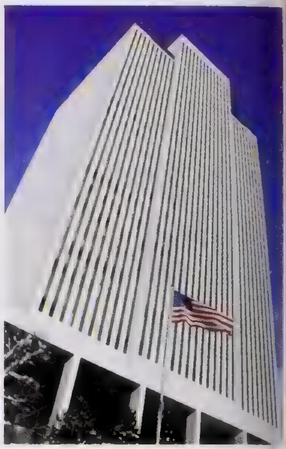
ISG Resources

Improving Performance of Concrete and Other Building Materials Using Recycled Coal Combustion Products



From concrete construction to roofing manufacturing – from precast concrete fabrication to mortars and stuccos – ISG Resources supplies materials that improve quality and sustainability of building products.

Operating coast to coast, ISG is the leader in marketing performance building materials from coal combustion products. Whether it's improving concrete durability with performance enhancing fly ash or beautifying exterior finishes with premium Magna Wall stuccos – ISG puts quality and sustainability at the forefront.

PERFORMANCE AND ENVIRONMENTAL BENEFITS: Fly Ash for Concrete

ISG is the undisputed leader in supplying fly ash to the concrete industry. Derived from burning coal, fly ash is a valuable additive that makes concrete stronger, more durable and easier to work with. Fly ash sources in 31 states are linked to a nationwide network of terminals and transportation equipment – ensuring customers receive quality material when they need it.

The environmental benefits of using fly ash in concrete are significant. Fly ash allows concrete producers to reduce the amount of cement used. That means less energy is consumed to manufacture cement and there are less greenhouse gas emissions from the process – almost a ton of carbon dioxide saved for every ton of cement that's not produced.

INNOVATION: New Fly Ash Based Technologies

ISG is also the leader in developing new building technologies that take advantage of the unique properties of fly ash. FlexCrete fiber reinforced aerated concrete is a low cost, easy to use building material suitable for housing and commercial construction around the world. SwiftCrete fast setting, high strength cement is an ideal all purpose asphalt and concrete repair material with numerous possibilities for concrete manufacturing applications.

SALES: Quality Building Materials

ISG also provides an array of traditional building materials containing fly ash. Through the company's Best Masonry subsidiary, ISG is a market leader supplying company-manufactured mortars and stuccos across the Sun Belt. ISG also manufactures Magna Wall – the nation's premier one-coat stucco system – with distribution nationwide.

ISG Resources
RiverPark Corporate Center One
10653 South River Front Parkway
Suite 300
South Jordan, Utah 84095-3527
(888) 236-6236
www.isgresources.com

ISG RESOURCES
A HEADWATERS Company

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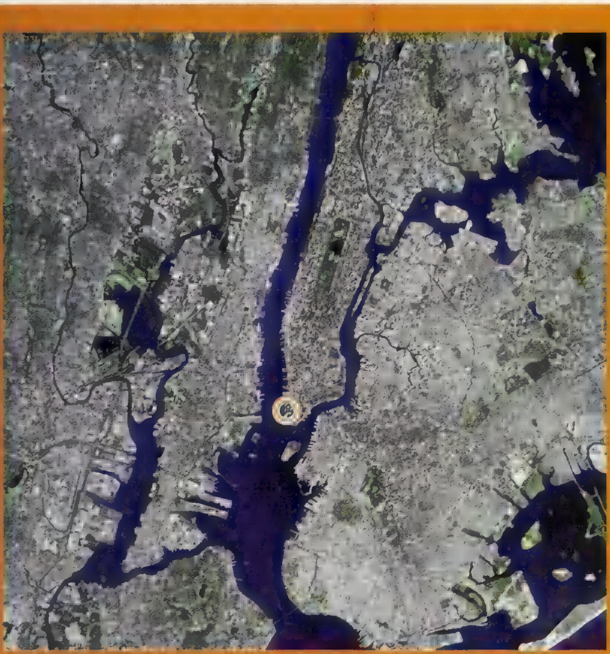


WAITING FOR GROUND ZERO

Architectural Record presents a discussion of the latest round of proposals for the World Trade Center site commissioned by the Lower Manhattan Development Corporation and the Port Authority of New York and New Jersey. Panelists include participants in the design study, as well as commentators on the architecture, urban design, and planning process.

Tuesday, January 7, 2003
6:30 p.m. to 8:00 p.m.
Reception to follow
McGraw-Hill Auditorium
1221 Avenue of the Americas
New York, New York

Tickets: $10
Reservations: 800/371-3238

Pemko

PemkoHinge™

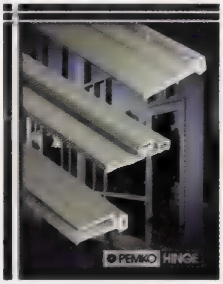
Unlike a conventional hinge, the PemkoHinge™ continuous geared hinge does not have a pin. PemkoHinge™ consists of 2 full-height, paired and geared leaves. Each geared leaf rotates evenly from top to bottom riding on Delrin®-Telfon® bearings. The geared leaves and bearings are held together by a full-length channel cap. This assembly retains the smooth, clean lines of the door and frame, while easily supporting heavy vertical loads. PemkoHinge™ eliminates typical alignment problems, such as door sag and binding, and distributes load stress uniformly along the full length of the door and frame. The gear design ensures identical operation of each leaf; therefore, very little effort is required to open heavy commercial doors.

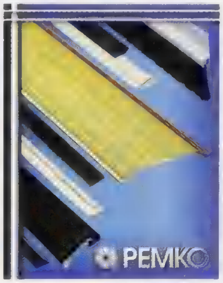
Thresholds, Door Bottoms & Gasketing

Pemko manufactures a wide selection of thresholds and door bottoms to meet virtually any commercial or residential application. Pemko offers numerous perimeter gasketing options, including rigid jamb, adjustable jamb, adhesive jamb, kerf-in, interlock and cushion/spring weatherstripping. All types are available in a range of sizes to fit virtually any gasketing need. All brush weatherstripping seals consist of densely compressed nylon filaments incased in high quality aluminum retainers. These products are ideally suited for hollow metal and wood doors in door sweep, jamb/header gasketing and split astragal applications. Pemko's brush weatherstripping products are also suitable for use on overheard, sectional, sliding and automatic doors.

Ramp Thresholds

Pemko's extensive line of ADA compliant ramp thresholds answers the needs of architects, specifiers, building owners, installers and most importantly, physically challenged people. Flush, offset and variable application thresholds are versatile and suitable for installation in virtually any environment, including schools, hospitals, offices, restaurants, hotels, stadiums, storefronts and all public access buildings. Assemblies consist of interlocking components, eliminating the need to weld joints. Optional components such as miter returns can be sold as part of the assembly. Finish options include an aluminum mill finish and the PemKote™ skid resistant surface. Pemko also offers ramp systems in Styrene Butadiene Rubber (SBR) and recycled rubber.





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Program title: **There Is No North Arrow In Outer Space, Architectural Record (12/02, page 153).**

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2.	a	b	c	d	**7.**	a	b	c	d
3.	a	b	c	d	**8.**	a	b	c	d
4.	a	b	c	d	**9.**	a	b	c	d
5.	a	b	c	d	**10.**	a	b	c	d

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2.	a	b	c	d	**6.**	a	b	c	d	**10.**	a	b	c	d
3.	a	b	c	d	**7.**	a	b	c	d					
4.	a	b	c	d	**8.**	a	b	c	d					

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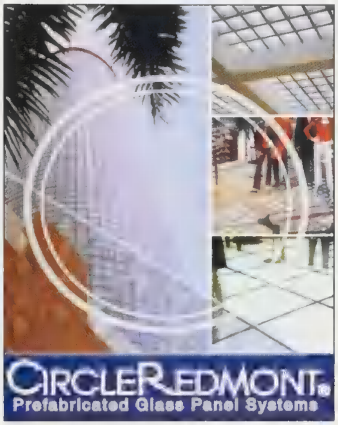

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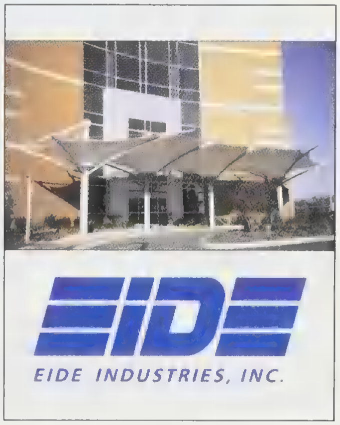

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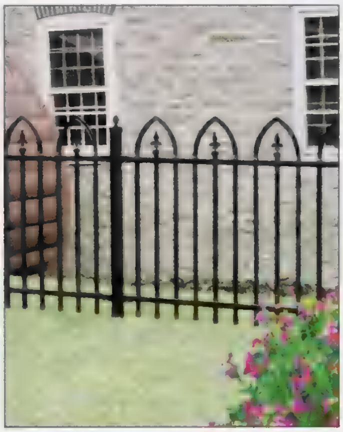

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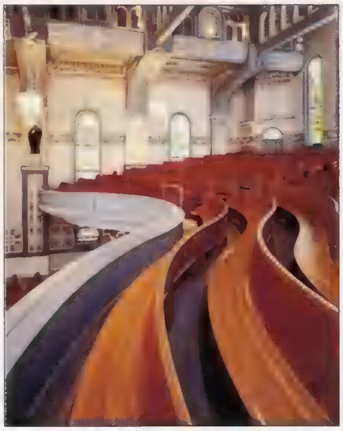

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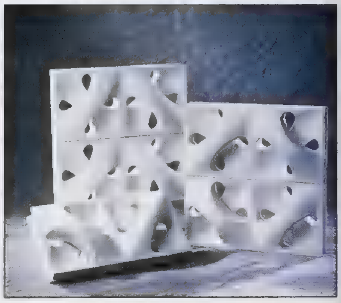

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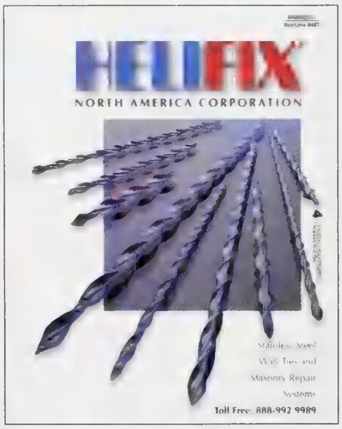
The unique Helifix 'DryFix' stainless steel remedial wall tie system is used to stabilize and strengthen masonry walls in both high rise and domestic buildings. The 'DryFix' system involves no toxic chemicals or complex expander devices while providing a fast, cost effective, stress free result in most common building materials. Helifix ties may also be used in new construction and masonry refacing. Call 888-992-9989 for further information.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INTERACT

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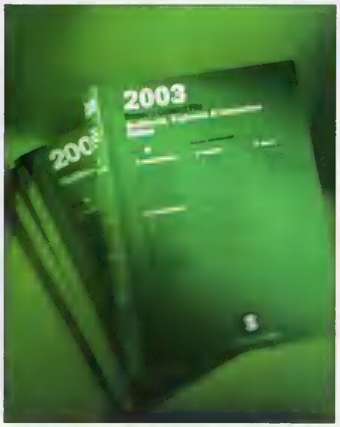
Sweets Product Marketplace—the industry standard for efficiently selecting, comparing & purchasing building products. Latest edition provides comprehensive information on over 61,300 products & more than 10,700 manufacturers. Includes a battery of fully-integrated print & electronic tools with clear color photos, installation diagrams, specifications, contact information, even CAD details, all organized & indexed for quick reference. Call 800-442-2258.



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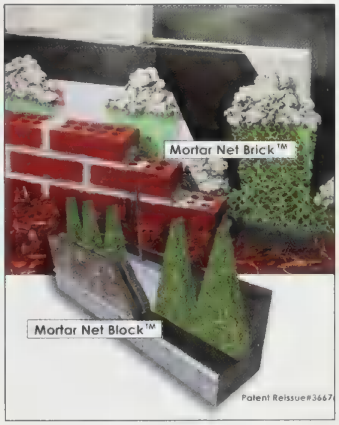

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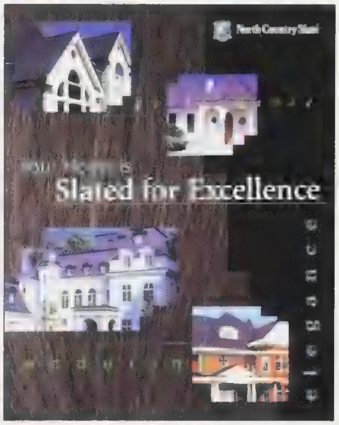

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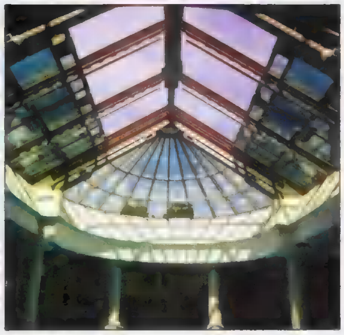

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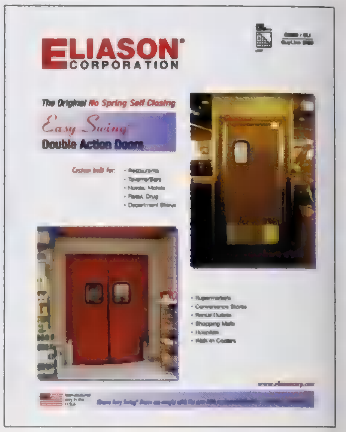

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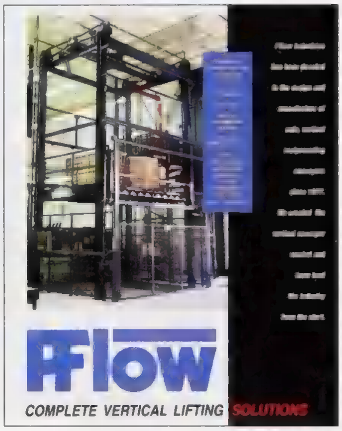

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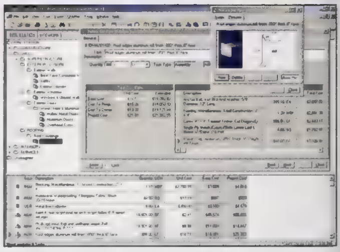

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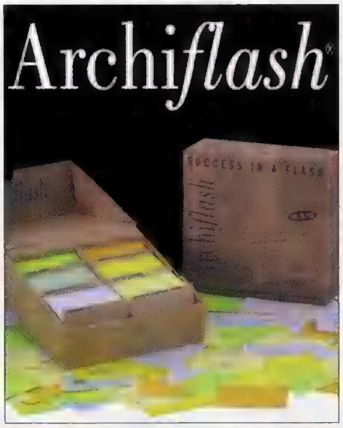

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Sanitary For All

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Samsung Staron

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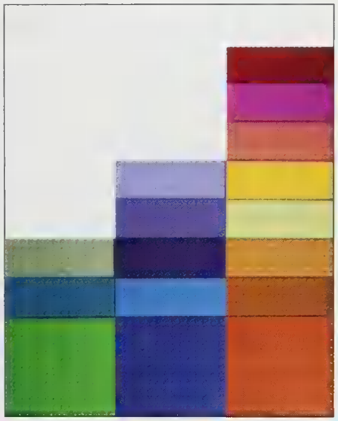

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Award winning projects begin with award winning materials. CHROMIX® Admixtures for Color-Conditioned Concrete are colored, water-reducing, set-controlling admixtures for architectural concrete. coloring concrete integrally, they produce rich hardscapes and precast, tilt-up, or cast-in-place buildings of natural beauty. CHROMIX Admixtures provide permanent, streak-free color conditioning, and increased concrete strength at all ages. 800-800-9900 or info@scofield.com.

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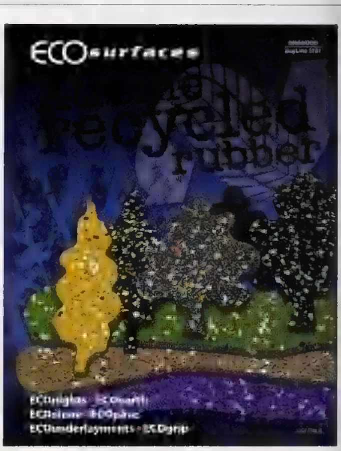
ECOsurfaces® Xtreme Recycled Rubber® commercial flooring offers a fresh new look complete with explosions of color and new market application options! Manufactured by Dodge-Regupol, Inc., one of the world's largest users of scrap tire rubber, ECOsurfaces 2003 product line includes 25 new color blends and 14 new sophisticated color granules to help you express your unique design concepts. 2003 catalog available February 2003.



Dodge-Regupol, Inc.

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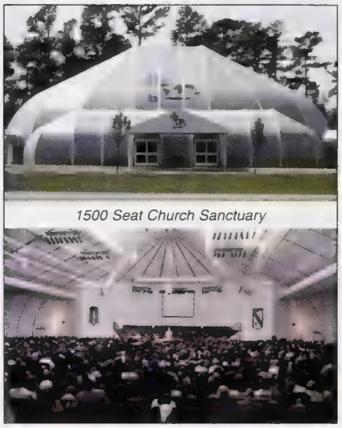
A Fast, Affordable, Relocatable Building Alternative

Sprung Structures provide a unique, innovative solution to enclose space in a fraction of the time of conventional construction and at a significantly lower cost. This stressed membrane structure technology is available in widths 30' to 160' by any length. 14 different architectural membrane colors available. Optional 8" fiberglass insulation package. Extensive guarantee program. Proven technology worldwide. 800-528-9899 www.sprung.com olsonc@sprung.com



1500 Seat Church Sanctuary

Sprung Instant Structures

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Classic Wall Cap

Classic Wall Cap combines distinctive good looks with high strength, hardrock concrete. You will find that Classic Wall Caps work perfectly as garden bench seats or as a design element that will refine your walls appearance. Classic Wall Cap is available in a variety of colors and finishes. Call toll free 1-800-572-9029 for our free CD. Visit our web-site: www.stepstoneinc.com

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Insulated Translucence in Glass

Quality buildings can now have all the benefits of insulated translucent glazing PLUS the timeless beauty & durability that comes only from glass. Unlike plastic solutions, SOLERA™ insulated translucent glazing units deliver over 70% light transmittance plus U values of .25 to .14. Curtain wall, sloped, skylights....glass to architectural spec. Call 902-794-2899 or visit www.advancedglazings.com

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Sto Guard™ – Superior Air and Moisture Barrier!

Sto Guard is a seamless, fluid-applied air and moisture barrier that provides superior protection against air and moisture intrusion in a variety of applications, including underneath brick, wood, vinyl, cement siding and EIFS. Sto Guard is a vapor-permeable barrier applied to sheathing and beneath exterior wall claddings. Ph: (800) 221-2397 Fax: (404) 346-3119 www.stocorp.com

Sto Corp.

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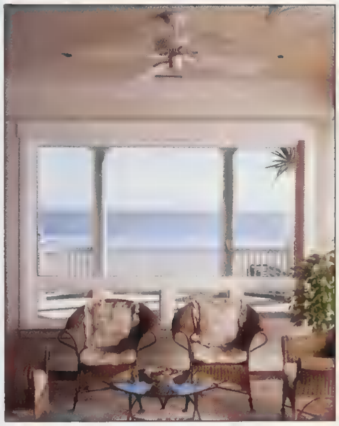
Visions 2000 Vinyl Windows and Doors

Weather Shield's Visions 2000 vinyl windows and doors are durable and virtually maintenance free. They come in a multitude of shapes and sizes that allow builders and remodelers to customize projects to fit their unique design needs. Visions 2000 vinyl windows are available in single and double-hung, single and double slide/by, casement and awning, and direct-set styles. They have been recognized as builder's brand of choice for 8 years in a row by Professional Builder Magazine.



Weather Shield Windows & Doors

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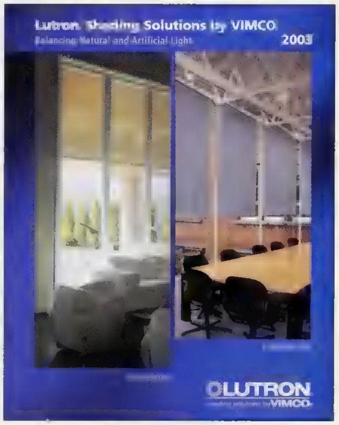
Lutron Shading Solutions by VIMCO

Motorized window treatments add convenience, enhance security, and increase privacy in any space. Seamlessly integrate window treatments with a lighting control system for total control of your environment. Dim the lights, lower the shades and close the draperies–all with one button. A 34-page brochure is available by calling 1-888-LUTRON1. Please request part number 367-479.


Lutron Shading Solutions by VIMCO
Balancing Natural and Artificial Light
2003
LUTRON
VIMCO

Lutron Electronics

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Applications

The new flush exit device is designed for use on TOTAL DOORS in single, pairs and double egress pairs. Ideal for corridor & elevator lobby applications in all commercial facilities. The exit device allows continuous, uninterrupted sight-lines in corridors when doors are pocketed in the open position. Its quiet operation is ideal anywhere noisy hardware is a problem. TOTAL DOORS can be retrofitted into existing door frames, saving time & expense.

Openings

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Concrete Waterproofing by Crystallization

Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures. Call toll free 1-800-961-4477 or visit our web site at www.xypex.com

Xypex Chemical Co.

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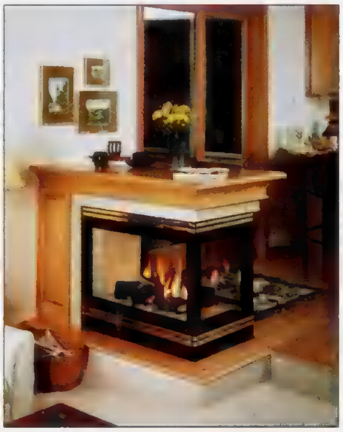
Three-Sided Fireplace for Unlimited Installations

Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call 888-427-3973.



Heat-N-Glo

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Scoreboards for Sports NEVCO Scoreboard Company

NEVCO Scoreboard Company manufactures LED and incandescent lamp scoreboards for the following sports: basketball, baseball, football, soccer, wrestling, volleyball, swimming, track, hockey and in-line hockey. Nevco scoreboards carry a 5 year guarantee and are UL Listed/CSA Certified. Call 800-851-4040 for information and a free color catalog. We have been manufacturing scoreboards for over 65 years. E-mail: nevco@nevcoscoreboards.com www.nevcoscoreboards.com

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Oldcastle Glass®

Oldcastle Glass® is North America's largest independent glass fabricator providing proprietary products such as Stackwall™, Bentemp® and Heat Mirror™. In addition, other glass types offered by Oldcastle Glass are Heat Treated, Laminated, Insulating, Spandrel, Silk-Screened Decorative, Hurricane-Resistant, Bullet-Resistant, Security and All-Glass Entrance Systems. Call 1-866-OLDCASTLE or visit www.oldcastleglass.com and log on to GlasSelect™, our new glass specification tool.

Oldcastle Glass®

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Pittsburgh Corning THICKSET® 60 Glass Block

Pittsburgh Corning announces new THICKSET® glass blocks. THICKSET® 60 provide a 60-minute fire rating in a window assembly, which is ideal for applications where safety, aesthetics and cost are concerns. THICKSET 60 glass blocks are ideal for builders and architects who are concerned about meeting fire rating codes without sacrificing the ideal qualities of glass block. 800-624-2120 ext. 700 www.pittsburghcorning.com/architects

Pittsburgh Corning Corp.

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Optima Plus® EBF-85 Touchless Faucet

Sloan's Optima Plus® EBF-85 touchless, sensor-operated faucet offers durability and complies with the ADA. The battery-powered faucet's microprocessor-based circuitry automatically adjusts its sensing range and the EBF-85 has a valve mechanism with a self-cleaning bypass that activates with every cycle while the clean-out strainer traps debris before it enters the solenoid.

Sloan Valve Company

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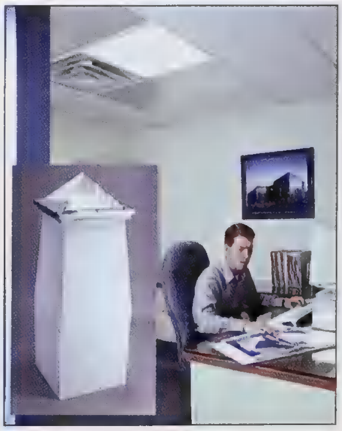
Solar Megaphone™ From Naturalite Skylight Systems

Solar Megaphone is a simple solution to a simple problem... reaping the benefits of natural daylighting effectively and inexpensively. Specially designed for applications using drop ceilings, Solar Megaphone uses cutting-edge collimating technology to help bring the positive benefits of the sun into your design.



Naturalite Skylight Systems

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New Acousti-Mat® Brochure

Acousti-Mat®, the Best Barrier Between Floors and Noise Complaints. Features Acousti-Mat II and new Acousti-Mat® 3, the sound deadening solution for floor systems that have been impossible to control! Put an end to those "noise" complaints – even with open beam, concrete slabs and conventional wood frame systems. Maxxon, Underlayment is poured over the Acousti-Mat 3, increasing IIC and STC up to 17 rating points over wood frame! www.MaxxonCorporation.com. Call 1-800-356-7887 or e-mail info@maxxon.com.

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Fabric Structures

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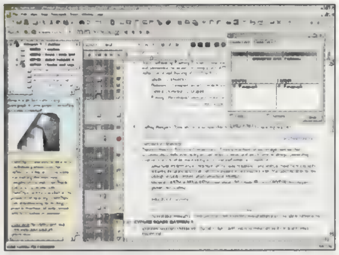
BSD SpecLink® improves specification editing speed and accuracy by activating related text and excluding incompatible options. Quarterly CDs allow users to update specs automatically, ignore updates, or mark updated paragraphs for later consideration. Powerful production features include global formatting, automatic table of contents, and over a dozen reports. New Wizard capability enables checklist editing of an office master. 888-BSD-SOFT (888-273-7638); www.bsdsoftlink.com.



Building Systems Design, Inc.

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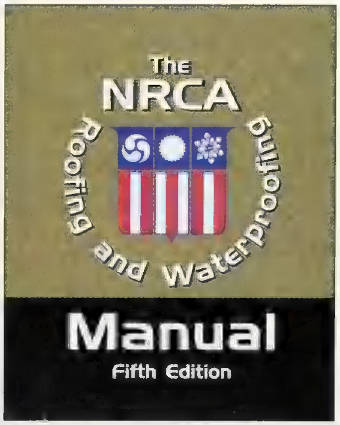
The NRCA Roofing and Waterproofing Manual (5th ed.)

This comprehensive technical manual gives you 1,474 pages of low- and steep-slope information about roof system design and installation. It also provides 455 roofing details in isometric and section views and is conveniently packaged in a boxed set that contains four three-ring binders. A CD-ROM version also is available. To order, visit shop.nrca.net, or call NRCA InfoExpress at (866) 275-6722.



NRCA

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Graffiti Resistant Panels For Infill Applications

Mapes Industries offers a complete line of graffiti resistant panels with a genuine porcelain enamel on aluminum surface. In-house color matching capabilities combined with various component options provide the designer with unlimited design solutions. Kynar, anodized and baked enamel finishes are also available. For more information, contact the factory at www.mapeind.com

Mapes Industries, Inc.

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FRX™ Exterior FRT Lumber & Plywood

Code-complying fire retardant properties plus the economy and natural appeal of real wood — in exposed applications. For decks, balconies, stairways, siding, etc. FRX™ exterior fire retardant treated wood is new from the developers of Dricon® FRT wood (for interiors) and FTX® wood shakes. See www.frxwood.com.

Arch Wood Protection

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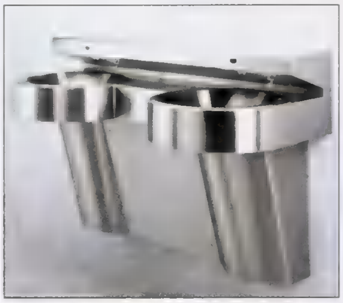
As innovators of washroom plumbing design, Neo-Metro Collection's System M2 is the solution that merges creative design with ease of installation. Only one plumbing connection is required for multiple basin arrangements, in a variety of modern basin styles and options. System M2 is the ideal washing system for modern office spaces, restaurants and hospitality venues. Call (800) 591 -9050 or visit www.neo-metro.com.



Neo-Metro® Collection

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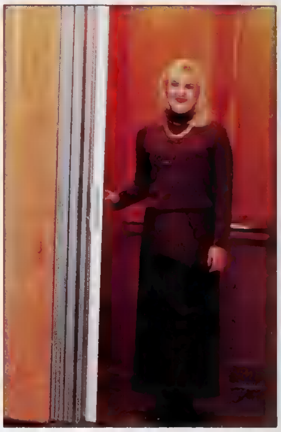
Waupaca Elevator

Waupaca Elevator specializes in the manufacture of customized winding drum and hydraulic elevators exclusively for residential use as well as in the manufacture of residential and light-duty commercial dumbwaiters. Waupaca Elevator prides itself on its craftsmanship and variety of options available to the homeowner. For further information contact us at: 1726 N. Ballard Rd., Appleton, WI 54911. Tel: 800-238-8739. www.waupacaelevator.com.



Waupaca Elevator

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HSW Credit from Wood University

WoodUniversity.org, APA – The Engineered Wood Association's new online training center, offers a series of self-paced learning modules that address the features and benefits of structural wood panels, glued laminated timber, I-joists, and other engineered wood products. Accredited by AIA, Course 101: Engineered Wood Basics is worth five LU's that meet HSW requirements. For more information, log on: www.wooduniversity.org

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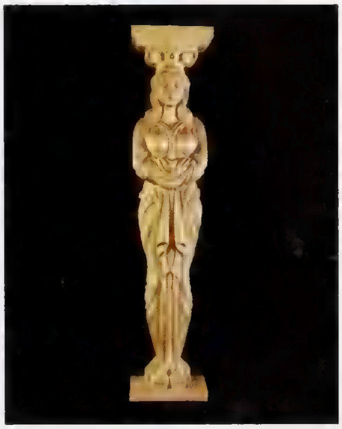

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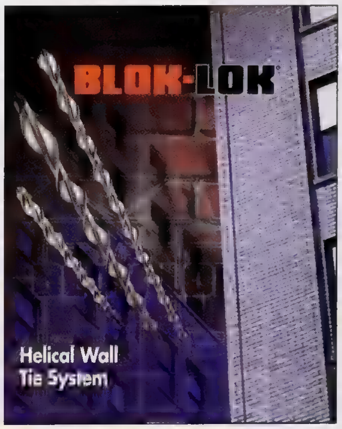
Blok-Lok, with over 35 years experience in the design and manufacture of masonry reinforcing and tie systems, provides innovative solutions for the repair and stabilization of defective walls. Blok-Lok offers an economical stainless steel helical wall tie that is driven into position through a properly sized pilot hole, providing a positive connection between wythes, while allowing for differential movement. Call 800-561-3026 or visit our website at www.blok-lok.com



Blok-Lok, Ltd.

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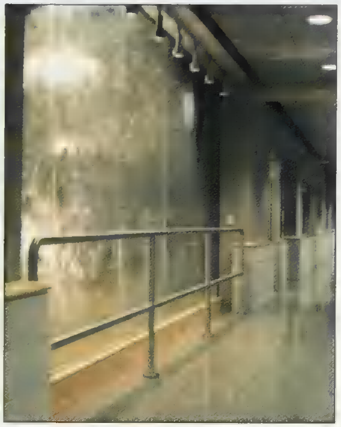

Meltdown Glass

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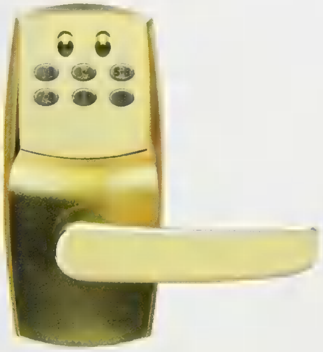
COBRA

Schlage introduces a new standard for programmable locks. The new Cobra programmable lock packs maximum security into a beautiful, architectural, compact design. Cobra is available in five finishes and two lever styles to match existing hardware. With 100 code capability, new codes can be easily added or changed within seconds at the keypad. To learn more, visit irsecurityandsafety.com or call 1-866-322-1237.



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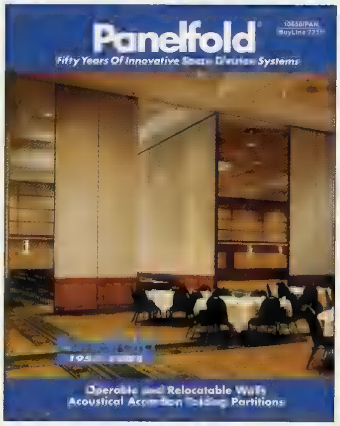
Now in its fifth decade, Panelfold has long been recognized as the innovative leader in the folding door, acoustical accordion folding partition and the operable and relocatable wall industry. Established in 1953, the company has progressed from its first small factory to a 140,000 square foot modern facility in suburban Miami, Florida, U.S.A. and has been a major employer in Miami's multi-cultural community. Fax: (305) 688-0185. E-mail: sales@panelfold.com. Visit our website: www.panelfold.com


Panelfold
Fifty Years Of Innovative Space Division Systems
Operable and Relocatable Walls
Acoustical Accordion Folding Partitions

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BROWARD COUNTY
FLORIDA

Family Court Facility
REQUEST FOR LETTERS OF INTEREST
RLI# 200221008-0-CM-01

The Board of County Commissioners, Broward County, Florida invites qualified firms to submit Letters of Interest to provide professional consulting services in response to Broward County Construction Management Division's solicitation for comprehensive A/E services for the design and construction of a new 200,000+ square foot judicial facility for Family Courts. The facility will be built on County-owned property in downtown Fort Lauderdale at an estimated construction cost of 35 Million Dollars. Details of the solicitation may be obtained through Broward County's website:

http://www.broward.org/purchasing/bids/bids.htm

or by contacting

Edmond M. Maurice, AIA,
Director of Construction Management
(954) 357-6417.

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Apply knowledge of architectural principles to assist in design projects, incl. specs., drawings, implementation oversight, design standards, budget compliance. Reqs: Bachelor of Arch. & preferably Master of Arch. w/emphasis on Environmental Arch. + 3yr. Exp. w/Engineering aspects of Architecture, incl. strong tech. exp. w/production of architectural design & construction docs. AUTO DESK Architectural Desktop 3.0, PhotoShop & Page Maker proficiency. CV's to: Urban Design Group Attn. Linda Gaudette, 1621 18th St., #200, Denver, CO 80202.

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Int'l Group, Huttig Building Products, Auburn, WA. Architectural design engineering and consulting for building projects in Korea. Requires Bach Deg or foreign degree equiv in Architectural Engineering or related design engineering field, and two years of architectural design and consulting experience including experience in all aspects of site planning and building design for commercial and residential projects; and two years of experience importing/exporting building materials; and fluency (reading, writing and speaking) in Korean and English. Experience may be gained concurrently. Competitive comp. EOE. Send resume to: Scott Meyer, Huttig Building Products, PO Box 1049, Auburn, WA 98071-1049.

ARCHITECT

Must have Bachelor's in Architecture/related field or its equiv., min. 2 yrs. exp. Consult with clients, create architectural designs, perform market studies, estimate costs, plan & supervise construction, prepare related agreements. 40 hrs/wk, 9AM-6PM. Competitive salary. Send resume to: Hanmi Commercial, Inc., 6471 Atlantic Blvd., Norcross, GA 30071.

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Architectural Designer wanted by architectural dsgn firm in NYC. Req'd Bach in Architecture or US Equiv + 3 yrs comp exp + exp w/AutoCAD, + exp w/transportation projects. Fax resume to James MacDonald @ 212-840-0063.

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Architectural Designer for Albany, NY firm. Must possess B.Arch. degree or Arch. Eng. degree + 3 yrs exp in arch design of museum, educational and public facilities. Send resume to Collins+Scoville Architects, P.C., 40 Beaver Street, Albany, NY 12207. EOE

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Architectural Designer req. by Engineering/Architectural firm located in San Diego, CA. Work with AutoCAD in design and production of constructions docs for buildings. Bach degree or/equiv. req. in Architecture. Send resume to: H.R. Dept. Lyons, Warren & Assoc, Inc. 9455 Ridgehaven Court, Suite 200, San Diego, CA 92123.

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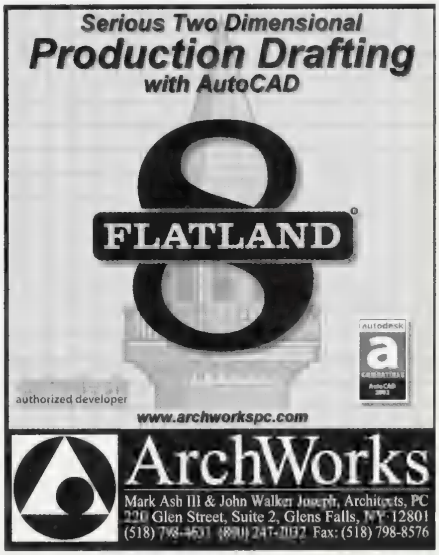
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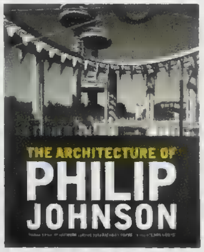

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Profile

Marcel Wanders: Don't label him as just another Dutch designer

Interviewed by Josephine Minutillo

Within the span of a few years, Marcel Wanders has made the transition from brazen, young upstart, with his novel designs for the Dutch avant-garde label Droog, to become a leading figure in contemporary design, all the while creating innovative, often quirky objects. Most recently, he's taken on new roles as art director for two other Dutch furniture lines, Moooi and Lensvelt, and as interior designer for the new Mandarina Duck flagship store in London. Wanders literally "breathes life" into the fashionable Italian label's store with a series of patchwork walls and lifelike mannequins that gently inhale and exhale.

Q: *Your designs range from furniture and lighting to jewelry and accessories—how do you face each new design challenge?* What I find so inspiring about my profession is the opportunity to work on a wide variety of projects. At the moment, I am working on a collection for a new brand of baby accessories, including a stroller and car seat; a collection of hand-painted ceramic plates; residential towers in Mexico; lighting for Flos and Swarovski; a large crystal chandelier for the Dutch "White House"—the prime minister's residence—and a lot more.

You often get categorized as being part of a new Dutch movement in design. Is that an accurate or fair assessment? I do not consider myself a Dutch designer. I am who I am, and, of course, what surrounds me influences me, but we live in a large world. When I was a child, I listened to the stories of Grimm, music of Vivaldi, went on vacation in Bordeaux, followed football in the U.K. When I was older, I started reading Ken Wilber and Nietzsche, came across Tony Robbins and Deepak Chopra, learned lessons from the Dalai Lama. I am the poetry of my past days, a careful assembly of all these encounters.

What is your main goal or approach when you design something?
I am here to create an environment of love, to live with passion, and to make my most exciting dreams come true. I like to make things light and with a sense of humor, but never a joke.

Though your designs are often whimsical or tongue-in-cheek, it is obvious you take design very seriously. Are your designs a reflection of your personality? If I open the door of my living room, I am in my studio. There is only one Marcel Wanders: He is a designer, father, lover, writer, poet, troublemaker, friend. I can only be that all at once. Every man has the right to make a masterpiece of his life, and it is our right to try to contribute to this masterpiece. I try with my designs to make a connection to real life and to contribute to the lives of people. I know that I take design as seriously as my life, but even there—there is no reason to take even life too seriously.

Photograph by Dick Duyres of Wanders with his Big Shadow lamp for Cappellini

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